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Economic and Social Problems of Puerto Rico

by

Augusta Bird Davis

B.A., University of Puerto Rico, 1954

ECONOMIC AND SOCIAL PROBLEMS OF PUERTO RICO

submitted in partial fulfillment of

the requirements for the degree of

Master of Business Administration

1961



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BOSTON UNIVERSITY

College of Business Administration

THESIS

Economic and Social Problems of Puerto Rico

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Augusto Bird Ortiz

(B.B.A., University of Puerto Rico, 1934)

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FOREWORD

The study herein proposes to make an analysis and interpretation of the economic and social problems of Puerto Rico and in no way does it intend to be definite. It hardly seems logical to expect it to be so, in the light of limitations under which it was written. The study does not attempt to cover all of Puerto Rico's varied and complex problems, but is principally concerned with the structure and operations of the main industries of the Island as related to the natural, human, and capital resources and external relations of the country. No effort has been made to discuss the fiscal situation in Puerto Rico, or the education, health, governmental or banking problems. Likewise, the whole labor problem is necessarily left untouched, except in reference to wages, employment and working conditions in certain specific industries.

The study is based on data available up to 1940, except for a few insertions and references to more recent events. It has required far more research than was expected at its inception in September, 1942. A striking lack of accurate data exists, especially statistical, bearing on many of the most fundamental aspects of the Island's economic and social problems. Drawing conclusions and recommending remedies and policies have, therefore, been difficult. It is the purpose of this study to present such basic information as could be gathered and to make such contributions toward the solution of Puerto Rico's social and economic problems as were deemed necessary.

The organization of the materials is as follows: the first chapter aims to give an all-round picture of the natural resources of the Island. Chapter II constitutes an exposition of what is considered to be Puerto Rico's principal economic problem--overpopulation. All efforts have been made in this chapter to show the inadequacy of the means of sustenance which is detrimental to the people of Puerto Rico. Chapter III contains an analysis of the agricultural organization of the country. Chapters IV to VII, inclusive, deal with a discussion of the main difficulties that at present beset the principal industries of the Island, such as sugar, tobacco, coffee, fruits and minor crops. Chapter VIII consists of a brief survey of the chief manufactures and the problems which actually confront them. Chapter IX presents an interpretation of the external trade situation, the extent and character of absentee ownership, the American coastwise shipping laws, and in conclusion, contains some notes on the balance of payments and the effect of Puerto Rico's inclusion within the American customs union on the trade of the Island. Chapter X presents the author's general interpretations of Puerto Rico's main economic and social problems, and such conclusions and opinions as he felt justified in making.

The use of certain terms needs an explanation. Often the word "jibaro" has been employed to describe the country worker in the Island. The word "colono" has been used referring to cane growers not allied with sugar mill interests. The term "agregados" refers to the landless agricultural laborers, and that of "parceleros" stands for small parcels of land. It has also been necessary for the purposes of analysis to differentiate between factors of local character and those involving

the United States proper. Thus, the term "mainland" is used frequently to denote the continental United States; "external trade" for what would be called "foreign trade" were the island of Puerto Rico an independent economic entity. All other terms are self-explanatory.

Augusto Bird Ortiz

March 18, 1943

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The perimeter and position of the East Indian group known as the Greater Antilles. The island measures 35 miles in width and 100 miles in length and is situated between latitudes 18° 34' and 19° 33' north and longitudes 66° 33' and 67° 18' west. In general outline it is about a geometrically regular parallelogram, three times as long as broad. The coast line is irregularly straight and the coast is usually low, especially on the western part, with a few low promontories and completely lacking in any indentations. It has a total area of 3,400 square miles, a coast line of some 140 miles, and the size is about three-fourths that of Connecticut and three times that of Rhode Island.

2. Location.

The island occupies a midway position in the group of islands known as the Greater Antilles and separating the Caribbean from the Atlantic Ocean. It lies about 200 miles north of the narrow point of Venezuela, 1,000 miles northwest of New York, about 1,000 miles from St. Paul, St. Peter, and the Virgin Islands of the West, Florida. Its strategic position in the Caribbean has been recently recognized by the United States, which has made San Juan, the capital city, the site of its strongest air and naval base in the Atlantic Ocean.

CHAPTER I

NATURAL RESOURCES AND THEIR UTILIZATION

A. Geographic Situation.

1. Relief Features.

Puerto Rico, a territorial possession of the United States, is the easternmost and smallest of the West Indies group known as the Greater Antilles. The Island averages 35 miles in width and 100 miles in length and is situated between latitudes $17^{\circ} 54'$ and $18^{\circ} 30'$ north and longitude $65^{\circ} 35'$ and $67^{\circ} 15'$ west. In general outline it is almost a geometrically regular parallelogram, three times as long as broad. Its sea line is nearly straight and the coast is usually low, especially on the southern part, with a few low promontories and completely lacking in deep indentations. It has a total area of 3,435 square miles, a coast line of some 345 miles, and its size is about three-fourths that of Connecticut and three times that of Rhode Island.

2. Location.

The Island occupies a midway position in the group of islands linking Venezuela and Florida and separating the Caribbean from the Atlantic ocean. It lies about 500 miles north of the nearest point of Venezuela, 1399 miles southeast of New York, about 1000 miles from Colon, Panama, and 963 miles east of Key West, Florida. Its strategic position in the Caribbean has been recently recognized by the United States, which has made San Juan, the capital city, the site of its strongest air and naval base in the Atlantic ocean.

B. Topography and Geology.

1. Physiographic Regions.

Three principal physiographic regions are identified in the island of Puerto Rico: a central mountainous core of volcanic origin, an elevated area of coral limestone surrounding the mountainous portion, and the coastal plain.

A scientific survey of the forests of Puerto Rico, made in cooperation with the Government of the Island and published in 1916, constitutes one of the few contributions to our knowledge of the physiography and soils of the Island. From this I quote:

"The central mountain area occupies by far the largest portion of the island. Viewed from the sea it presents a rugged and serrated aspect; numerous peaks and summits, with no definite crest line, rise from a general mass, which has been cut by erosion into lateral ridges, separated by deep, steep-sided gorges. The drainage divide is approximately parallel to the southern coast and about 10 or 15 miles distant from it. The region thus has a long and relatively gentle inclination toward the north coast, but falls off rather abruptly toward the south." (1)

Three ranges make up the central mountain area: the "Sierra de Luquillo," the "Sierra de Cayey," and the "Cordillera Central." The "Sierra de Luquillo" is surrounded by low coastal plains and thus appears to be very high and dominating, and one of its peaks, "El Yunque" (the anvil), 3532 feet in altitude, located at the northeastern corner of the Island, has been credited with being the most conspicuous in the country. The remaining mountain mass forms a main crest line extending from Humacao on the coast through Aibonito and Adjuntas to within a short distance of Mayaguez on the Western portion of the Island. The portion lying east of

(1) Murphy, Louis S., "Forests of Porto Rico," U.S. Government Printing Office, Washington, 1916, Page 4.

Aibonito is the "Sierra de Cayey"; that to the west, the "Cordillera Central." The thirteen highest peaks on the Island are situated in the "Cordillera Central." The highest of these, the "Pico de Jayuya," near the center of the Island, rises 1,341 meters (4398 ft.) above sea level.

The coral limestone belt is apparently of sedimentary origin, is several miles wide in sections and, in certain places of the Island, extends directly to the water's edge, where it ends in steep scarps. This occurs principally on the south coast west of Ponce and on the north coast west of Quebradillas. Elsewhere on the Island the remnants of this formation stand as steep, sloping, solitary mounds or domes, which rise singly or in chains above the coastal plain. Travel through most of the regions within this belt is difficult due to the prevalence of pitlike valleys which leaves no other alternative but to cross the pits in succession, going down to the bottom of one and then ascending to the edge of the next. The larger pits occasionally have an acre or more of bottom with a very good soil where coffee, bananas, and ground provisions are cultivated.

The coastal plain proper is completely sedimentary, is elevated but a few feet above sea level and has but a slight gradient toward the mountains. It ends rather abruptly at the foothills, except in the valleys of the larger rivers. The sandy ridge fronting the coast forms a barrier between the sea and a narrow low-lying area scarcely above tidewater level, and partly marine and partly alluvial in origin. On the north part of the Island there are many swamps and lagoons covered with a thick growth of mangrove bushes. On the south, the mangrove is only slightly developed, but there are places where rank grasses, a few dispersed acacias, or low,

succulent herbs make the only vegetation.

2. Soils.

As a consequence of the almost continuous action of heavy showers, a high temperature and high relative humidity, rock weathering at the higher elevations of the central mountain area is more rapid than erosion, as evidenced by a soil cover of considerable depth here. The typical soils are deep, reddish clay loams and tenacious red clays. The cohesiveness and compactness of these soils enables them to hold an almost vertical position. Cultivation, as a result, is in many places effected on the very summits of the ridges and on the steepest slopes. At the less conspicuous elevations the sandy character of the soil and the more frequent occurrence of outcrop demonstrate that the rate at which rock erosion has taken place has surpassed that of weathering.

The soil of the coastal plain, except on the isolated, low coast plain hills, is largely a fine, rich alluvium and is almost completely under cultivation or in pasture. Most of the Island's highly productive soils lie in this region. In discussing the variation in fertility and general features of these soils, an authority says:

"Extending in either direction from San Juan as far as Fajardo on the east and Toa Baja on the west, is a belt of acid clay planted almost exclusively in sugar cane and, where it merges into a sandy coast belt, in citrus fruits. On the eastern coast south of Fajardo, and up the valleys that open westward from the sea, the soil ranges from clay to sandy clay, and when well watered bears crops of cane. West of Toa Baja limestone makes its appearance, becoming prominent at Arecibo, and continuing to Rincon beyond the northwestern corner of the Island. Near Aguadilla, in a district which suffers at times from deficient rainfall, the amount of calcium carbonate is so great in spots that the land is whitish and unproductive. On the other hand, at the opposite end of a line drawn diagonally across

the Island from this point, in the eastern half of the southern coast plain, are some of the most productive cane lands in the country. They owe their richness to the fact that their fertility has not been washed out by heavy rainfall; but they require irrigation. These clay and sandy clay soils with their high humus content, continue nearly to Ponce, the principal city on the southern coast, where lime again appears. West of this the soil is somewhat leaner, but nevertheless bears abundant cane crops." (1)

Some of the most productive lands of Puerto Rico are in the interior of the country and are commonly planted in tobacco. These lands are rich in fertility and humus content which fact accounts for the classification of these lands as "black soils". Farther inland to the West, in the highlands surrounding the town of Adjuntas, a pinkish clay is found on the humid mountain sides and saddles, verging to brown with its increasing humus content in pockets and on lower slopes. This is ideal coffee soil, and in the days of Spanish dominion when the product constituted the principal source of income for the Island, these lands were considered among the most valuable in the country.

C. Climatic Conditions.

1. Temperature.

Few territories under the American flag afford such a delightful climate as Puerto Rico. Though well within the Tropics, it has a warm, comfortable and equable climate, for the modifying influences of the sea are intensified by its situation in the path of the trade winds. These counteract the enervating effect of the high temperature and humidity, the occasional periods of oppressive weather happening always when they fail.

The climate is thus hot, but always comfortable; there is homogeneity without the enervating monotony which the northerner finds lacking.

The temperature throughout the year is uniform. The average winter temperature is 73.7° Fahrenheit and the summer average is 78.8° Fahrenheit. The average daily maximum temperature, as taken from U.S. Weather Bureau records for 39 years, is 86° and the average daily minimum temperature for the same period is 66.9° Fahrenheit. The mean monthly temperatures vary from 73.2° , in January and February, to 79° , in August; while the mean annual temperature is 76.5° Fahrenheit. The highest mean maximum temperature, 88.3° , happens in August, and the lowest mean minimum temperature, 63° is recorded in February (see Table I).

2. Precipitation.

There is much more variability in the average annual rainfall than shown in the temperature. The average annual rainfall for the whole Island is over 68 inches, but the quantity varies considerably from year to year and in geographical distribution. The heaviest is recorded in the "Sierra de Luquillo" which is exposed to the full sweep of the trade winds. In the mountainous areas of the northeastern and southwestern parts of the Island recordings of 100 to 200 inches have been made. The rainfall decreases toward the north and south coasts, from 55 to 75 inches per year occurring on the north coast and from 29 to 52 inches per year on the south coast.

In general, the Island is well-watered with the exception of three regions:

1. On the southern coastal plain extending from Patillas to Boqueron, precipitation averages less than fifty inches--from 49 inches

in Guayama to 26 inches in Ensenada and the variability is considerable. With high evaporation this quantity is not sufficient for profitable sugar cane cultivation which requires no less than 60 inches in normal soils. Irrigation works under the auspices of the Insular government and private individuals have been devised in an effort to offset aridity. The south-flowing streams Coamo, Patillas, and Jacaguas have been dammed for the purpose. Also tributaries of two north-flowing rivers (the Toro Negro and La Plata) have been diverted toward the dried lands of the southern coastal region. Actually the Insular Irrigation Service on the southern coast is supplying 48 inches of water annually to about 33,000 acres of land, all of them planted to sugar cane.

2. The northwestern corner of the Island has also light precipitation. Its leveled topography prevents the convectional rains which usually accompany the trade winds in striking the windward side of the mountains. This accounts for the small amount of rainfall of this area, which in the average is about 51 inches annually. The area is thus outside the minimum rainfall requirements for sugar-growing. The porous soils of the region add to the aridity of the land and make irrigation necessary. At present the Guajataca river is supplying water for 6,000 acres situated in the Isabela district, in the northwestern section of the Island. As a result sugar acreage has increased substantially in this section at the expense of food crops and pasture.

3. The Cayey Valley is also deficient in rainfall requirements. Annual average rainfall is only about 52 inches. Variability constitutes the greatest risk. This is a sugar cane-tobacco-pasture-minor-crop region where recently the Puerto Rico Reconstruction Administration (P.R.R.A.) purchased 4,400 acres of land.

TABLE I

Average Temperature and Precipitation
in Puerto Rico, by months,
1899 to 1938.

Month	Temperature			Precipitation
	Maximum	Minimum	Mean	Mean
January	82.9	63.5	73.2	3.72
February	83.5	63.0	73.2	2.91
March	84.3	63.5	73.9	3.28
April	85.4	65.3	75.4	4.42
May	86.5	67.9	77.2	7.28
June	87.5	69.2	78.4	6.21
July	87.9	69.6	78.8	6.23
August	88.3	69.8	79.0	7.53
September	88.2	69.5	78.8	5.94
October	87.6	68.8	78.2	7.97
November	86.0	67.5	76.8	7.16
December	84.0	65.1	74.6	4.57
Annual Average	86.0	66.9	76.5	67.22

Source: Compiled from information given in "Puerto Rico, Industrial and Commercial, P.R. Department of Agriculture and Commerce, 1938.

Rain falls almost every day over some portion of the Island, except possibly a few days in February. For the Island as a whole the average number of days in a year with rain is around 169, the minimum and maximum frequency are apparently at Guanica on the south coast, and in "Sierra de Luquillo". The average humidity for the Island is about 80 percent, the minimum in the driest month around 77 percent, and the maximum in the most humid, around 82 percent. The average barometric pressure is around 30 inches and deviations from this mean are almost unnoticeable.

Hurricanes are an important feature of the Island's climate, and generally occur during the months from July to October. The months of the

greatest frequency are August and September. Hurricanes originating during these months commonly come from farther east and bring greater intensity and destructiveness than those of earlier or later months. Hurricanes are important more for their destructive power than for their frequency. Hurricane winds blowing occasionally at a velocity of 200 miles per hour create havoc with all production. Property losses in general during the 1928 hurricane were estimated at \$50,000,000, and those for the 1932 hurricane at \$30,000,000. Damage was greater in the coffee, citrus, and coconut regions.

D. Land Distribution.

1. Land Classification.

The total area of the island of Puerto Rico is placed at 3,435 square miles. The 1935 Census reported an acreage for the whole Island of 2,113,704 cuerdas (1), out of which 1,913,047 cuerdas, or 90.5 per cent, constituted land in farms. Clear pasture land and croplands (harvested and idle) were estimated to be 77.5 per cent of the total land in farms. Unimproved land including pasture not cleared, other woodland in farms, and all other land in farms was estimated at 22.5 per cent of all land in farms. The rest up to the total area was occupied by urban areas and Federal or Insular government lands mainly covered with forest.

The area that is really amenable of cultivation is relatively small. Of the 1,483,683 cuerdas of clear pasture land and croplands only 711,270 cuerdas were harvested in 1935, or only 37 per cent of all the land in farms. Up to what extent cultivation can be carried on, is very difficult to determine.

(1) One cuerda equals 0.9712 acres.

If the arid and semi-arid sections of the Island were fully irrigated, and lagoons and mangrove soils drained, cultivated acreage could probably be extended to around one million cuerdas. Even so, consideration must be given to the fact that such extension would include many cuerdas of poor land that would be unfit for crop production, were it not for the excessive population pressure. Right now the Island is being coerced to utilize steep, stony, sandy and generally unproductive soils because of the pressing need of satisfying the population's needs.

2. Soil Erosion in Land Distribution.

The rugged topography of the Island combined with the composition of its soils helps to explain why Puerto Rico has a small percentage of its land under cultivation. The best of this land has been cultivated for centuries, but because until a recent time farm practices were not scientifically applied to avoid soil erosion, a considerable portion of the original farm resources has been materially affected and impaired. In discussing soils located in sections which offer some hope of reforestation, a reliable writer says:

"Rocks and soils from this source (volcanic origin) decompose with tremendous rapidity in tropical regions and, as a result, the so-called soils of Porto Rico are only mechanical in analysis, not in composition. They are very low in silicates and high in their content of iron and aluminum hydrates, and are referred to as laterite soils. These red claylike soils, extremely heavy and that pack and puddle badly even to the extent of being impervious to air and water, which are formed from lava, decomposed through the action of periods of drought and tropical downpours, are those upon which Porto Rico must depend for the re-establishment of her forests." (1)

(1) Durland, William D., "Forest Regeneration in Porto Rico," Economic Geography, Vol. V, No. 4, Page 373, October 1929.

Soil erosion, thus, has played a major role in diminishing the areas of cultivated land to a great extent. It has wiped out top-soils in a large part of the Island, leaving unproductive soils which have been gradually abandoned by the farmers. Aside from rains and hurricanes, the farm practices in vogue, added to the type of crop cultivation done, have augmented soil depletion substantially.

E. Forests.

The Island is very sparsely wooded. The inaccessible forest jungles, frequently referred to in the West Indies, are so scarce that one may cross and recross the Island without noticing them, for, with the exception of those in the Luquillo mountains, they are tucked away in the more impenetrable places into which few except the "jibaro" ever penetrate. Puerto Rico is, however, by no means entirely devoid of wood growth. Around almost every place there are scattered groups of trees, such as the mango and the bread fruit; and numerous dispersed single trees, mostly palms, dot the landscape. The protective cover of shade trees of the coffee fields gives a definitely forested structure to many municipalities.

The forests of Puerto Rico are actually so fragmentary and so limited in extent and have been so substantially transformed by the activities of the population during various centuries that they afford themselves almost no basis for description and classification. Of the once extensive virgin tropical forest there now are left only isolated remnants dispersed over the Island in its most mountainous regions. The most important of these, and the largest as well, still covers a substantial part of the Luquillo Range. Within the boundaries of this range lies the Caribbean National Forest. This Federal forest reserve covers an extension of over 23,000 cuerdas of forest land already acquired or optioned.

Besides over 19,000 cuerdas of deforested lands have been acquired and plans for reforestation made by the Puerto Rico Reconstruction Administration.

There are, moreover, thousands of cuerdas assessed as "woodlands" (brush and woods), and a few thousands of cuerdas classified as swamps and largely under mangrove. Of the timber and brush areas the bulk are found in the southern, southeastern, and southwestern parts of the Island, on the dry limestone slopes and other land of small or no agrarian value. On the north side such areas are found almost exclusively on the thin-soiled, conical limestone slopes.

F. Minerals.

Puerto Rico is not absolutely destitute of mineral resources, though it is a known fact that it has no stores of coal or oil. Most of these minerals may prove to bear no commercial value in the future, but the absence of mines can be ascribed to capital timidity rather than to absence of encouraging possibilities. There are prospects in the Island, which, if they were situated in other lands, would have been thoroughly exploited since a long time ago. Such exploitation, however, bears no immediate possibilities so long as local capital fails to participate first in such development and be a forerunner stimulant to outside capital investments.

The Island actually has mineral deposits in manganese, gold, iron, copper, lead, zinc, pyrites, gypsum, barite, and other non-metallic substances. Only manganese, iron, copper, gold, and barite prospects deserve special study though other minerals and non-metallic substances offer some promises.

Manganese is the only metal which has been produced in commercial

quantities in the Island. The importance of this mineral in any national defense program, makes it the most important of Puerto Rico's mineral resources. Though it has a great many uses in industry, approximately 90 per cent of it is used as "metallurgical" ore. Almost all the other is utilized in diverse chemical industries, the chief of which is the making of dry batteries. The ores of the Island are not only fairly high grade in manganese content, but are devoid of deleterious impurities, a fact which makes them more marketable and suitable for almost all uses. The greatest possibilities in the Island seem to be in the Juana Diaz and Adjuntas districts. It has been considered by the Bureau of Mines that considerable high-grade ore could be obtained at a profit in the Aguada district by the natives, or by other individuals working under a low overhead cost. (1) It is doubtful, however, if there are deposits extensive enough to warrant a huge organization. The possibilities in the Las Marias, Lares, Corozal, and Cabo Rojo districts are less promising, but even then, the explorations done in them are not sufficient as to nullify their possibilities totally. Should a situation arise where the United States sees itself unable to obtain its usual foreign supplies, either in whole or in part, the potentialities of these resources in the Island will then receive the attention they merit.

Gold prospects in Puerto Rico take two forms: Placer Deposits and Lode Deposits. Placer possibilities are principally present in the lower parts of the rivers draining the Corozal-Naranjito-Barranquitas, Luquillo, and San German districts. The value of the gravels found in these districts are still unknown. Up to now presence of gold has been

(1) "Report of the Committee of Mineral Resources," Bureau of Mines, Government of Puerto Rico, 1934, Page 24.

found but in discouraging quantities. The information, however, is inconclusive. The Bureau of Mines of the Island seems to believe there are good possibilities. (1) Lode deposits are located in San German, Corozal, Guayama, Barranquitas, Utuado and the Luquillo district.

The Island also has four important iron deposits, namely: Las Mesas, at Mayaguez; the Juncos-Humacao deposit; in the barrio Tibes of Ponce; and the Arroyo district. There are also other deposits of bog-iron ores near Bayamon and Caguas but they bear almost no commercial possibilities. Exploitation of these resources, however, has not taken place yet in large scale due not only to the low price commanded by iron, but also because of other unfavorable economic factors. Only those deposits large enough to allow large scale exploitation, are of commercial interest. The tendency also has been to work out the richer and more accessible deposits.

Copper minerals are the most dispersed of all the minerals in the Island, and have been seen in such scattered places as Naguabo, Cayey, Corozal, Comerio, Orocovis, Ciales, Aguada and San German. Many of these showings, unfortunately, seem to be no more than copper stains and to bear therefore no commercial possibilities. There are some, however, that hold some promise and on which some work is already being done in the Island.

Barite prospects have been found to exist in Lajas, Ciales, and Coamo. The possibility of commercially exploiting these prospects depends on locating veins extensive enough to permit large scale production over several years. A market for the mineral seems to have been found in the Caribbean at a price only slightly less than the normal price in the American market plus the freight rate to the Mainland. Such a price appears

(1) "Report of the Committee of Mineral Resources," Bureau of Mines, Government of Puerto Rico, 1934, Pages 6-8.

to make profitable the exploitation of this mineral and negotiations have been carried on for the purpose of starting the mining of the mineral. The market looks sufficiently extensive so that if exploitation exposes veins of good size, this mineral will be the basis of a small local industry for a number of years.

G. Fisheries.

1. Per Capita Consumption.

The population of Puerto Rico to-day is close to two million inhabitants. The catch of fishery products averages 4,000,000 pounds annually. This indicates an annual per capita consumption of 2 pounds. This, of course, does not represent the total consumption of fishery products in the Island. In the year 1939-40, a total of about 33,000,000 pounds of fresh, frozen, cured, or canned fishery products were brought into the Island. This gives an annual per capita consumption of 17 pounds, which added to the per capita figure for locally caught fish products increases the annual consumption to 19 pounds per capita. This does not compare favorably with other tropical possessions of the United States, such as the Virgin Islands, where the annual per capita consumption is about 32 pounds. (1)

The per capita consumption of fish in Puerto Rico shows a downward trend. In 1897 the annual per capita consumption of fish was about 36.8 pounds which contrasted to the most recent figure (19 pounds) represents a net decrease of about 40 per cent. This is due largely to changes in diet requirements, to a decrease in the importation of cured fish, and to the fact that fish prices were lower then compared to more recent times.

(1) Jarvis, Norman D., "The Fisheries of Puerto Rico," U.S. Department of Commerce, Bureau of Fisheries, Washington, 1932, Page 24.

2. Imports of Fishery Products.

During 1939-40 the island of Puerto Rico imported 33,205,708 pounds of fresh, frozen, cured, or canned fishery products, valued at \$1,587,401. (1)

During a survey made in 1899 data were collected on the shipments of fishery products into Puerto Rico for several years preceding the American occupation. Statistics collected at that time indicate that in 1897 the Island imported 34,155,983 pounds of fishery products, valued at \$2,123,931. (2) The 1939-40 figure thus shows a decrease of 950,275 pounds in amount and \$536,530 in value, or a decrease of approximately 2.8 per cent in amount and 25 per cent in value of fishery products brought into Puerto Rico compared with the imports during 1897.

Fishery products in 1939-40 were imported mainly from Newfoundland and Labrador, Canada, and the United States. Newfoundland and Labrador led, supplying 18,307,024 pounds, with a value of \$771,938, or approximately 55 per cent in amount and 49 per cent in value of the total. Canada held second place, furnishing 7,310,843 pounds, with a value of \$345,061, or about 22 per cent of the total amount and 22 per cent of the total value. The United States came third, with 3,601,236 pounds, to a value of \$312,599, or about 11 per cent of the total amount and 19 per cent of the total value. The balance of the fishery imports into Puerto Rico, amounting to 3,986,605 pounds, or about 12 per cent of the total, was furnished by other foreign countries.

(1) P.R. Department of Agriculture and Commerce, "Annual Book of Statistics," 1939-40.

(2) Jarvis, Norman D., "The Fisheries of Puerto Rico," U.S. Department of Commerce, Bureau of Fisheries, Washington, 1932, Page 26.

3. Actual Organization of the Fishery Industry.

The fishing apparatus used in the island of Puerto Rico is entirely home made. Though home made, the gear is well constructed and matches with that which is used in other localities. A great number of the large sailboats are equipped with live wells and have a considerable fishing radius. The smaller sailboats have no live wells and are not decked. This boat is employed chiefly in the trawl-line and hand-line fisheries. The rowboats employed are nearly all of the same type, flat-bottomed skiffs of the dory type from 15 to 20 feet in length and 3 to 4 feet beam. In almost every case a small sail is used to supplement the oars. Their fishing radius is very restricted, and they cannot go out except in good weather. Motor boats employed are not especially adapted for fishing, but their fishing radius is greater and they are not so dependent on the weather.

"Nasas" (fish pots), "chinchorros" (haul lines), "trasmayas" (gill nets), trammel nets, "tarrayas" (cast nets), hoop nets, "corrales" (weirs), hand lines, troll lines, trawl lines, and several minor varieties of gear are used in carrying on the fisheries of Puerto Rico.

The fishing area in the Island includes all of its coasts. The northern coast offers limited possibilities of development due to irregularity of bottom, to adverse weather conditions, and to the fact that the coast is free from shallow banks, reefs, or fringing islets around which one might expect to find fish. The southern area including all the coast line from Yeguas Point on the southeast to Cape Rojo on the southwest is also a limited fishing area despite the fact that it ranks first as producing area. Irregularity of bottom accounts for its disadvantages though the fact that it is less exposed to storms makes it a better area than that

found in the north coast. The western coast including the shore line from Point Agujereada on the northwest to Cabo Rojo on the southwest is considered to hold out much greater possibilities than the fishing areas of the north or the south. This area has a more regular bottom and is more shallow, the boats used are better constructed, and it has a better supply of fish than the northern or southern coasts. The eastern coast covers from Cape San Juan on the north to Point Yeguas on the south. It also includes the island of Culebra and Vieques Island. This area, including 1,500 square miles of possible fishing grounds, has been regarded as the greatest potential producing area for fishery products in the Island. If any large increase is to be made in the catch it must be obtained in this area.

Fish is sold through fish stalls in the principal markets of the Island: San Juan, Ponce, and Mayaguez. In other markets fish is sold by peddling through the streets. There is no adequate refrigeration in the Island and sanitary standards in fish marketing are very low.

4. Possibilities of Expansion.

It has been demonstrated that about 30,000,000 pounds of cured fishery products are brought annually into Puerto Rico. This represents an original round weight as caught of about 60,000,000 pounds. This means that to furnish this amount the local fish industry has to expand to about fifteen times its actual size. This does not seem probable since it would cost more to catch the fish and have it market-ready than to import the products. (1) Also one must consider that in all events the waters of Puerto Rico could not supply this amount. For these reasons, there is

(1) Jarvis, Norman D., "The Fisheries of Puerto Rico," U.S. Department of Commerce, Bureau of Fisheries, Washington, 1932, Page 38.

ground to believe that the Island's sources can never provide for local needs and that substantial amounts of fresh, frozen, salted, smoked, dried, and canned fishery products will always have to be imported.

Fisheries in Puerto Rico could be developed and their methods improved by: (1) using faster boats, well-equipped for handling fish, (2) using ice in shipping and displaying fish for sale, (3) improving refrigeration facilities, (4) improving the fishing apparatus, (5) making use of preservatives to maintain gears in good condition and lengthen their life, (6) exercising better care in fish handling, (7) employing better sanitary methods, (8) organizing a good system of buying the catch from the fisherman, (9) creating greater regularity in shipments, and (10) preventing the waste of occasional surplus catches and providing means of utilizing them.

H. Hydroelectric Resources.

1. Output of Hydroelectric Power.

Electric service throughout the Island is rendered by government and municipally owned plants, as well as by private utilities. The four major systems operating on the Island are, the Porto Rico Railway Light and Power Company, the Utilization of Water Resources, the Mayaguez Light Power and Ice Company and the Isabela Irrigation Service. Table II shows the movements which have taken place during the last five years up to 1941 in the aggregate annual output of electric energy by these four systems.

As indicated in Table II, the increase of output in 1940-41 was 26,137,405 kilowatt-hours, or 15.8 per cent greater than the output of the preceding fiscal year and 5,723,740 kilowatt-hours or 28 per cent more than the increase in 1939-40 over the previous fiscal year 1938-39. Such increase in the annual development is to be ascribed mainly to National Defense projects.

Table II

Electric Energy Output in Puerto Rico,
1936 to 1941.

Fiscal Year	Total		Increase Over	
	Production		Previous Fiscal Year	
	K. W. H.		K. W. H.	Per Cent
1936-37	:	109,649,208	:	16,174,442 : 17.3
1937-38	:	129,047,475	:	19,398,267 : 17.7
1938-39	:	145,569,360	:	16,521,885 : 12.8
1939-40	:	165,983,025	:	20,413,665 : 14.0
1940-41	:	192,120,430	:	26,137,405 : 15.8

Source: Forty-First Annual Report of the Governor of Puerto Rico, 1941.

One fact, however, should not be overlooked. Of the total electric energy produced by the aforementioned enterprises, during the fiscal year 1940-41, 44.2 per cent was produced by fuel oil, while in the case of the Utilization of the Water Resources alone, 16.9 per cent of its total output and 20.7 per cent of its total requirements, was by fuel oil.

Table III

Production of Electric Energy by Water Power,
Fuel Oil and Sugar Mills,
1939 to 1941.

	:	Production	:	Production	:	Purchased	:	
Fiscal	:	by	:	by	:	from	:	Total
Year	:	Water Power	:	Fuel Oil	:	Sugar Mills	:	K. W. H.
	:	K. W. H.	:	K. W. H.	:	K. W. H.	:	
1938-39	:	97,797,670	:	46,045,015	:	1,726,675	:	145,569,360
1939-40	:	87,602,840	:	75,014,410	:	3,365,775	:	165,983,025
1940-41	:	104,743,060	:	82,972,940	:	4,404,430	:	192,120,430

Source: Forty-First Annual Report of the Governor of Puerto Rico, 1941.

An examination of Table III reveals that in 1940-41 there was only an increase of 7,958,530 kilowatt-hours in output by fuel oil over that of 1939-40, while the energy produced by water power, reveals an increase of 17,140,220 kilowatt-hours. The power acquired from sugar mills which is generated as by-product from the burning of bagasse was 1,038,655 kilowatt-

Table II

Electric Energy Output in Electric Plants
in the U.S.

Year	Electric Energy Output in Electric Plants	Total
1925-26	10,100,000	10,100,000
1926-27	10,100,000	10,100,000
1927-28	10,100,000	10,100,000
1928-29	10,100,000	10,100,000
1929-30	10,100,000	10,100,000
1930-31	10,100,000	10,100,000

Source: Forty-first Annual Report of the Commission on Electric Power, 1931.

One fact, however, should not be overlooked. Of the total electric energy produced by the acknowledged enterprises, during the fiscal year 1930-31, 44.5 per cent was furnished by fuel oil, while in the case of the utilization of the water resources alone, 44.7 per cent of the total output and 44.7 per cent of the total requirements, was by fuel oil.

Table III

Production of Electric Energy in Electric Plants
in the U.S.
1925 to 1931

Year	Electric Energy Output in Electric Plants	Total
1925-26	10,100,000	10,100,000
1926-27	10,100,000	10,100,000
1927-28	10,100,000	10,100,000
1928-29	10,100,000	10,100,000
1929-30	10,100,000	10,100,000
1930-31	10,100,000	10,100,000

An examination of Table III reveals that in 1930-31 there was

only an increase of 1,350,000 kilowatt-hours in output as compared with 1929-30, while the energy produced by water power, reveals an increase of 17,100,000 kilowatt-hours. The power supplied from water which is generated as by-product from the burning of gasoline was 1,000,000 kilowatt-

hours greater than that of 1939-40. This means that more than 65 per cent of the 1940-41 increase in the demand was supplied by water power, a little over 30 per cent by fuel oil, and 4 per cent by surplus bagasse.

2. The Utilization of Water Resources.

The Utilization of Water Resources, whose properties and functions have been transferred to the Puerto Rico Water Resources Authority since October 29, 1941, comprised four hydroelectric plants and one steam plant with an aggregate generating capacity of 18,900 KVA; 300 miles of 38 KV transmission line and 17 transformer sub-stations with an aggregated transformer capacity of 18,500 KVA; 550 miles of 4 KV secondary transmission lines; seven municipal distribution systems serving in the aggregate approximately 23,000 consumers, plus private telephone system and office and transportation equipment employed in conducting the service. It had besides property comprising three additional hydro-electric plants with a total immediate generating capacity of 23,000 KVA.

In 1941 the system actually comprised the following plants: Toro Negro No. 1; Toro Negro No. 2; Carite Plants No. 1, 2, and 3; Garzas Plants Nos. 1 and 2; and the Ponce Steam Plant. The total system input for 1941 was of 80,736,894 kilowatt-hours, of which 60,293,600 K.W.H. were produced by the hydroelectric plants. To-day the system also envelopes the newly constructed additional plants under the Garzas and Dos Bocas projects.

CHAPTER II

POPULATIONA. General Statement of the Problem.1. The Actual Situation.

Puerto Rico is actually menaced by one of the most serious problems which can confront any nation in the world, that of over-population. An island that scarcely has 3,400 square miles, and whose natural and mineral resources are wanting, must support a population of about 2,000,000, or approximately 588 inhabitants per square mile. This density is exceeded only in countries having at their disposal larger resources and better economic opportunities, such as highly industrialized countries of unquestioned richness in mineral resources, centers of commerce and finance, or by countries of sub-western living standards like Java and the Straits Settlements, Barbados, Martinique, Mauritius, and sections of India and China.

2. Standards of Living.

The rapid increase in the number of people produced a chronic structural maladjustment between human wants and means of subsistence. In Puerto Rico this has resulted in the low standards of living common to densely populated agrarian regions. Wages in the Island have reached very low levels, though not such low levels as sustained in equally dense countries like Java, China, and India. An authority in the matter has said:

"Wages are in general extremely low for the working masses. Average weekly earnings for 1934-35 in important occupations ranged from \$1.94 in coffee cultivation to \$7.65 in sugar factories. Agricultural laborers, who constituted 54 per cent of all workers on salary, wage, or commission in 1930, earned per week, on the average \$2.21 in coffee, \$2.12 in tobacco, \$2.81 in fruits, and \$3.33 in sugar cane. The School of Tropical Medicine upon request of the local Department of Labor estimated the essential requirements

of an adequate diet for a family of five members. Adequate food requirements alone were almost four times what the average worker earned in 1933." (1)

A more recent study throws additional light on the same situation:

"Not quite 70 per cent of the total number of gainful workers were gainfully occupied at the time of this survey in 1938. The mean wage was sixty cents a day. Three-fifths of the laborers worked from eight to forty-three weeks during the year. The average annual earnings from wages per worker was \$102.34. The annual income of families was on the average of \$171.29 and the annual income per capita \$28.71, or eight cents per day for all necessities of life. Four-fifths of the weekly income was spent in food." (2)

Individual incomes in Puerto Rico are extremely low by any standard of comparison. In fact, the income of most of the families of the Island is at a level which provides only the bare necessities of life. In 1938, Puerto Rico's per capita income was less than one-half that of Mississippi, the lowest State, 36 per cent of the average for eight southern states, and 13.6 per cent that of eight northeastern states. (3)

Per capita incomes do not clearly describe the entire situation. Food prices, the only reliable indicator of purchasing power available, indicate that the purchasing power of the dollar is only 85 per cent as great in Puerto Rico as in the South, and 92 per cent as great as in the entire nation. (4) On this basis, the present per capita income in the Island is only 30 per cent as great as in the southern states, and 17 per cent as great as in the nation as a whole.

(1) Cordero, Rafael de J., "The Problem of Overpopulation in Puerto Rico", P. R. R. A., 1936. (Typewritten)

(2) Zimmermann, Erich W., "Staff Report to the Interdepartmental Committee on Puerto Rico," Washington, 1930, Pages 50-51.

(3) Smith, Dudley, "Income Problems in Puerto Rico," Association of Sugar Producers of Puerto Rico, Washington, D. C., 1939, Page 5.

(4) Ibid, Page 6.

3. Evidences of Maladjustment.

Evidence of social maladjustment in Puerto Rico appears in all phases of Puerto Rican life, such as diet, earnings, and employment. Rural workers live in material poverty. Their conditions of living could hardly be called a standard of living. A great many houses are small, averaging less than 200 square feet of floor area, bare of furniture, and highly overcrowded. Food is not only inadequate but insufficient. The daily diet consists of coffee, rarely with milk, for breakfast; vegetables and dried codfish for lunch; rice and beans for supper. Most of the people having three meals a day consider themselves fortunate for the majority go frequently on two meals a day, and sometimes on one only. Unemployment is crucial. It results in low average annual earnings for those who must constantly struggle with desperate economic conditions.

In describing the general conditions of living of the rural working mass, one of the members of the Brookings Institution research staff said:

"Emergencies and misfortune are either completely unprovided for, or they are provided for 'providentially'. There may be a pig or goat which may be sold; appeals may be made to the landlord, to some charitable association like the Red Cross, or to some religious or philanthropic organization. Or there may be recourse to the municipal doctor, and to the municipal drug store and dispensary, where one is to be found.

"Generally speaking, birth, sickness, accident, and death are suffered with little attempt at alleviation. In the mountain homes of the 'jibaro' one all too commonly finds illness and suffering accepted with a helpless fatalism.

"There is a degree of submissiveness to misfortune and a lack of class feeling that to an outside observer is difficult to understand. Perhaps it is the widespread illness,

3. Evidence of Malnutrition.

Evidence of mental malnutrition is found in all phases of human life, such as diet, language, and religion. Rural workers live in material poverty. Their conditions of living could hardly be called a standard of living. A good many houses are built, averaging less than 100 square feet of floor space, with no windows, and highly overcrowded. Food is not only inadequate but insubstantial. The daily diet consists of coarse, rarely with milk. The breakfast vegetables and dried codfish for lunch, rice and beans for supper. Most of the people having three meals a day consider themselves fortunate for the majority go frequently on two meals a day, and sometimes on one only. Dyspepsia is common. It results in low average annual earnings for these who work constantly despite their desperate conditions.

In describing the general conditions of living of the rural working man, one of the members of the Brooklyn Institute recently said:

"Rural workers and laborers are either mentally degenerated, or they are ignorant for 'practicality'. There may be a big element which may be good; however, we have to be careful, to have scientific education like the rest of the world, to have scientific or technical education. Or, we have some religious or philosophical education. In these may be resources to the material world, and to the physical drug store and laboratory; there may be to be found."

"Generally speaking, birth, education, and death are centered with little chance of education. In the material world of the world, we all too commonly find illness and suffering accepted with a religious belief. There is a feeling of resignation in the face of death, and a feeling that it is the only way to escape the material world. There is in the material world, and in the material world, and in the material world."

perhaps it is the extreme poverty, perhaps the terrific impact of the periodic storms that carry all away with them and make human effort and ingenuity seem like naught, that explains the passive helplessness of the rural community." (1)

Another authority, quoted in "Puerto Rico and Its Problems", gives the following appraisal of the Island's health problem in its relation to economic factors:

"..... The problem here is fundamentally economic and not sanitary. No doubt improvements in water supplies, sewage disposal, etc., going on now in several of the large towns will have an appreciable effect, as will also the systematic work in rural sanitation (education and privy building) being carried on in connection with the hookworm campaign. But I fear we shall not see any great fall in the death rate so long as (1) there is an excess of labor with a big proportion of the people unemployed a great part of the year; and so long as (2) food costs more here than in the United States, while the wage of the common laborer averages less than a dollar a day. Under such conditions insufficient food, an unbalanced diet, and crowded housing will remain, and tuberculosis, malnutrition, intestinal and other infections will take their toll. The death rate from tuberculosis has already reached a point nearly three times that of New York and the increase is so marked, Dr. Haven Emerson predicted recently a decimating epidemic if radical preventive measures were not taken.....

"The crucial factor in the whole discouraging situation is the excess of population. It is difficult to see how the conditions of the laborer can be much improved so long as the supply of labor is greater than the demand. Attempts have been made at legislation in the way of hours, wages, land holdings, etc., but, as might have been expected, they have proven entirely ineffective. Large public health undertakings and development of an educational system to include practicable vocational training and a more thorough grounding in personal hygiene--the only non-revolutionary suggestions I have to offer--may help a little toward a solution of the problem. Better health will certainly improve economic conditions. The converse is even more certain. The two things are interdependent." (2)

(1) Clark, Victor S., and others, "Porto Rico and Its Problems", The Brookings Institution, Washington, 1930, Page 37.

(2) Ibid, Page 69.

4. Population and Means of Support.

Population has been increasing at a very fast rate and the pressure of the greater number of inhabitants on the supportative power of the soil becomes each day more intense. The population in December, 1935, according to the Census of the same year, was 1,725,534 inhabitants. This figure represents an increase of 1,678,651 over 1765; of 770,291 over 1899; and of 179,621 over 1930; in other words, an increase of 374 per cent over 1765, of 81 per cent over 1899, and of 11.6 per cent over 1930.

Many difficulties beset the task of estimating the future population of Puerto Rico. The actual accelerated growth would lead one to expect a continued rapid increase, but the extremely high density of population already reached, and the high disproportion prevailing between natural resources and means of support, makes one wonder how many more people can the land tolerate. The actual rate of increase in population is about 40,000 inhabitants annually. On the basis of this figure one can conclude that, provided the ratio of increase remains the same, Puerto Rico can expect a population of a little above two millions by 1945, and over three millions by 1960.

Puerto Rico's land surface is about 3,400 square miles. The total land area is 2,176,384 acres, of which about 1,200,000 acres are improved land and about one-third harvested croplands. There is about .7 of an acre of improved land per capita, and over $1/3$ of an acre of harvested crop land for each person. More than 60 per cent of the cultivated land has been devoted to the raising of export staples, such as sugar cane, tobacco, and fruits. This land yields the Puerto Rican farmer a better income than

2. Population and Income of Puerto Rico

Population has been increasing at a very fast rate and the pressure of the greater number of inhabitants on the agricultural power of the soil becomes each year more intense. The population in 1935, according to the Census of the same year, was 1,735,555 inhabitants. This figure represents an increase of 1,315,551 over 1783; of 700,000 over 1899; and of 130,000 over 1930; in other words, an increase of 314 per cent over 1783, of 61 per cent over 1899, and of 11.5 per cent over 1930.

Many difficulties stand in the way of estimating the future population of Puerto Rico. The actual uncontrolled growth would tend to expect a continued rapid increase, but the extremely high density of population already reached, and the high discrimination prevailing between natural resources and means of support, makes one wonder how many more people can the land tolerate. The actual rate of increase in population is about 20,000 inhabitants annually. On the basis of this figure one can conclude that, provided the ratio of increase remains the same, Puerto Rico can expect a population of 2,115,000 in the year 1945, and over three millions by 1955.

Puerto Rico's land surface is about 3,450 square miles. The total land area is 3,175,304 acres, of which about 1,500,000 acres are improved land and about one-third harvested crops. There is about 1/2 of an acre of improved land per capita, and over 1/3 of an acre of harvested crop land for each person. More than 50 per cent of the cultivated land has been devoted to the raising of sugar cane, such as sugar cane, tobacco, and citrus. This land yields the Puerto Rican farmer a better income than

it would if it were devoted to the production of food crops. The development of commercial agriculture during the last century has been instrumental in temporarily alleviating the economic poverty of the people. Possibilities of expansion along this line of development, however, are very limited. Commercial agriculture in the Island has almost reached a point of saturation beyond which further improvement is apparently impossible due to the relative fixity of the land factor and the uncertainty of foreign markets. Commenting on this phase of the problem, Professor Cordero, of the University of Puerto Rico, says:

"So far the population increase has been accompanied by a proportionate extension of the cultivated land and by an improvement of the agricultural technique. It is very doubtful that the future improvement and expansion in land utilization will be sufficient to take care, even at the present low levels of living, of increasing number of people. But even accepting an optimistic view of future economic developments, the question remains whether it would not be better as a social objective for the Island to raise present levels of poverty for the working masses rather than to let the present rate of increase lead the whole population towards Javannese or Chinese levels of misery and want. If the present irrational and improvident multiplication continues unchecked, the problem shall always be present in an aggravated form and any solution to the same will be more difficult to apply." (1)

B. Density.

On the basis of census figures the number of inhabitants has increased from the years 1765 to 1942 as indicated in the table on the next page. Population density rose from the low figure of 45 in 1800 to that of 506 inhabitants per square mile in 1935. Actually the population density is about 13 times that of 1800, and over two times that of 1899. The actual figure gravitates around 588 persons per square mile. This latter

(1) Cordero, Rafael De J., "The Problem of Overpopulation in Puerto Rico", P. R. R. A., 1936 (Typewritten).

it would be more desirable to the production of food crops. The development of commercial agriculture during the last century has been instrumental in temporarily alleviating the economic poverty of the island. Possibilities of expansion along this line of development, however, are very limited. Commercial agriculture in the island has almost reached a point of stagnation and cannot extend further. Investment in agriculture is impossible due to the relative scarcity of the land factor and the necessity of foreign exchange. Commenting on this aspect of the problem, Professor Gundersen, of the University

of Puerto Rico, says:

"So far the population increase has been accompanied by a proportionate extension of the cultivated land and by an improvement of the agricultural technique. It is very doubtful that the future development and expansion in land utilization will be sufficient to raise the level of the present low levels of living of increasing number of people. But even assuming an indefinite area of future economic development, the question remains whether it would not be better as a social objective for the island to raise present levels of poverty for the working masses rather than to let the present rate of increase lead the whole population towards dependence on foreign lands, slavery and want. If the present level of agricultural production continues unchanged, the present level of ways be present in an aggravated form and the solution to the same will be more difficult to reach." (1)

B. Population

In the basis of census figures the number of inhabitants has increased from the year 1763 to 1953 as indicated in the table on the next page. Population density rose from the low figure of 45 in 1763 to 1953. 600 inhabitants per square mile in 1953. Actually the population density is about 15 times that of 1763, and over two times that of 1898. The actual figure represents around 100 persons per square mile. This latter

(1) Gundersen, Robert J., "The Problem of Development in Puerto Rico," P. R. A. A. 1958 (Spring).

figure exceeds by about 300 that of the next most densely inhabited region of the Caribbean's larger islands, Haiti.

Table IV

Population Density, 1765-1942.
(Basis-3,400 square miles)

Year	Population	Density	Year	Population	Density
1765	44,883	13	1910	1,118,012	329
1800	155,426	45	1920	1,299,809	382
1815	220,892	65	1930	1,543,913	454
1846	447,914	131	1935	1,723,534	506
1899	953,243	280	1942	2,000,000	588 ^{1/}

^{1/} Estimated on the basis of actual rate of increase.

Source: Compiled from Census reports.

Every part of the Island is heavily populated. According to the last Census, conducted under P.R.R.A. auspices, the highest densities were found in municipalities where the largest towns are located; in the municipal districts near the capital city; in the tobacco and fruits regions; and in a small portion of the northwest part of the Island.

Density of population in the rural areas shows a slightly different picture. The highest concentration of population is evident in the tobacco and fruits sections and in the northwestern part of the Island. The sections with lowest concentration are located near Mayaguez, the center of the needlework industry, where many people have migrated from the uplands; in municipal regions with steep mountain slopes; and in municipalities located near or at the coastal plain where sugar-cane is almost exclusively planted.

C. Population Growth.

1. Actual Population Increase.

Population in Puerto Rico increased from 155,426 inhabitants in

figures recorded by about 1900 and of the last few years, however, the
of the United States, 1900.

TABLE IV

Population, 1900 - 1905
(Estimated, 1900 - 1905)

Year	Population	Density	Year	Population	Density
1900	44,000	12	1905	44,000	12
1901	44,000	12	1906	44,000	12
1902	44,000	12	1907	44,000	12
1903	44,000	12	1908	44,000	12
1904	44,000	12	1909	44,000	12
1905	44,000	12	1910	44,000	12

Estimated as the basis of which to be compared
Source: Census Bureau, 1900

Every part of the island is covered by vegetation. The
last census, recorded under 1900, showed the island to be
found in vegetation. The island is covered by vegetation; in the south-
and situated near the capital city, in the north and south regions; and
in a small portion of the northeast part of the island.

Density of population in the north region is slightly higher
one, however. The highest concentration of population is found in the
south and north regions and in the southwest part of the island. The
sections with lowest concentration are found in the north, the south-
the southwest regions. These two parts are situated in the north-
in the north regions with very low density. The island is
called near as the coastal plain which is situated in the north-
regions.

1. General Population

1. General Population

Population in the north region is also increasing from 1900 to 1910.

1800 to 953,243 in 1899, an increase of almost 514 per cent in a century. This astounding increase took effect at a decreasing rate of growth until the decade 1877-87. Since that date, it has been augmented at each decennial census, attaining an equivalent of 20.5 per cent for the period 1930-1935 (see Table V). At the actual rate of increase under any reasonable set of circumstances, the Puerto Rican population by 1960 will be about 1,000,000 larger than it was in 1935. The present density of population, together with this actual rate of growth, shows the necessity for remedial action from the standpoint of the population as well as from that of increased outlets for the Island's products.

Despite Puerto Rico's rapid population growth, the Island has not been singular in this respect. The population of the United States has since 1790 increased more rapidly than that of the Island. From 1790 to 1938, the continental population increased from less than 4,000,000 to more than 130,000,000, or to 34 times its previous level, while that of the Island rose from about 120,000 to 1,850,000, or to about 15 times the 1790 figure. However, the area embraced in the continental census expanded greatly, while the limits of the Island did not change. Puerto Rico's population increased rapidly from 1765 to 1810, but since the latter date, it has risen at approximately the same rate as that of the New England States, which were fairly well settled at that time, and at a slower rate than practically all other States.

Although the population has risen rapidly in the Island during the periods for which records have been available, this rise has been no more rapid than that of other regions. The real cause of the population problem is, however, much more deeply rooted, for the Island has had a much larger population relative to area than most other regions in the

Western Hemisphere ever since first population statistics were compiled for the Island in 1765.

Table V
Decennial Rate of Increase in Percentage,
1860-1935.

Census Interval	:	Decennial Rate	:	Census Interval	:	Decennial Rate
1860-1877	:	14.24	:	1910-1920	:	16.30
1877-1887	:	9.14	:	1920-1930	:	18.10
1887-1899	:	16.20	:	1930-1935	:	20.50
1899-1910	:	26.67	:		:	

Source: Compiled from census figures.

2. Causes of Growth.

In trying to determine the causes of growth three elements must be scrutinized: births, deaths, and immigration. Through natural increase, immigration, and the importation of slaves, the population increased from 44,883 in 1765 to 953,243 in 1899. In spite of a net emigration loss of 32,557, it increased to 1,723,534 in 1935. During the present century, however, immigration has ceased to be an influential factor in accounting for the tremendous growth that has taken place in the Island. It is the high birth rate and a death rate that has lately been decreasing, that constitute the explicative factors of the actual growth experienced.

a. The Birth Rate.---The birth rate per 1000 population in Puerto Rico was on the average 39.4 from 1935 to 1940, the number of births having fluctuated around 70,927 on the average for the same period (see Table VI). Puerto Rico's birth rate ranks among the highest in the world. It has remained largely unchanged for the last half-century. It is, however, not unusually high for a poverty-stricken, tropical, mountainous, island community like Puerto Rico. Higher rates are only found in undeveloped countries like China, India, and some of the Latin American countries.

The birth rate is high in all regions of the Island. The following municipalities showed the highest birth rates in 1940:

Bayamon	54.3	San Sebastian	46.2
Sabana Grande	52.9	Quebradillas	45.6
Rincon	50.4	Santa Isabel	45.4
Vieques	49.0	Lares	45.2
Patillas	47.3	Arroyo	45.0

The average birth rate in these ten municipalities with the highest rate was 48.1 as compared with 31.3 for the ten municipalities ranking lowest. Bayamon and Ceiba, represented respectively the upper and lower extremes in birth rate figures for 1940. The ten municipalities, which in this last year, had the lowest birth rates, were:

Ceiba	26.6	Rio Grande	32.8
Catano	27.0	Moca	33.2
Cidra	28.2	Morovis	33.5
Ciales	31.2	Coamo	33.7
Culebra	32.6	Hormigueros	33.9

In Puerto Rico a number of causes are directly responsible for the high birth rate. Among these may be distinguished the following:

- (1) almost complete ignorance of contraceptive measures or of voluntary control of births;
- (2) lack of ambition on the part of the working classes to improve their economic and social status;
- (3) relatively no increase in the ration of urban to rural population;
- (4) the relatively small number of skilled and white-collar workers in contrast to total working population;
- (5) the marriage rate, and
- (6) general low levels of living and rural conditions of life.

As Professor Cordero says:

"..... in Puerto Rico there is no evidence that the mass of the population is using voluntary birth control or that it knows much about contraceptive measures. The general poverty of the working classes and their low standards of living do not promote ambition to change and improve their economic

The birth rate is high in all regions of the island. The following

ing municipalities showed the highest birth rates in 1940.

Bayamon	45.5	San Juan	45.5
San Juan	45.5	Ponce	45.5
Ponce	45.5	San Pedro de Macoris	45.5
San Pedro de Macoris	45.5	San Juan	45.5
San Juan	45.5	San Juan	45.5
San Juan	45.5	San Juan	45.5

The average birth rate in these ten municipalities with the highest rate was 45.1 as compared with 31.5 for the ten municipalities having lowest. Bayamon and Colbe, represented respectively the upper and lower extremes in birth rate figures for 1940. The ten municipalities, which in 1940

last year, had the lowest birth rates, were:

Colbe	30.5	San Juan	30.5
San Juan	30.5	Ponce	30.5
Ponce	30.5	San Pedro de Macoris	30.5
San Pedro de Macoris	30.5	San Juan	30.5
San Juan	30.5	San Juan	30.5
San Juan	30.5	San Juan	30.5

In Puerto Rico a number of causes are directly responsible for

the high birth rate. Among these may be distinguished the following:

- (1) almost complete ignorance of contraceptive measures or of voluntary control of birth; (2) lack of education on the part of the working classes; (3) relatively no income; (4) the relatively small number in the urban of urban to rural population; (5) the relatively small number of skilled and white-collar workers in contrast to total working population; (6) the marriage rate, and (7) general low levels of living and rural con-

ditions of life.

In Professor Gordon says:

"..... In Puerto Rico there is no evidence that the rate of the population is rising voluntarily with control of birth. It is known that about 80% of the population is illiterate. The general poverty of the working classes and their low standards of living do not present obstacles to change and improve their economic

and social status. Although the ratio of urban to rural population is increasing, the Island is still predominantly rural and agricultural, with only 1/5 of the people living in cities of more than 10,000 inhabitants in 1935. There has been a women movement in Puerto Rico, but it has been restricted to the middle class and the upper economic levels. Skilled and white-collar workers have increased with the rapid development of professions, but still constitute a small proportion of the total working population, and their changing attitudes and behavior in relation to this problem has not as yet affected the general birth rate.

"..... in countries using voluntary birth control by means of contraceptives, the age of women at marriage and the proportion of married women, has little effect upon the birth rate. As contraceptives are not extensively used in Puerto Rico, a high marriage rate certainly contributes to a high birth rate." (1)

Table VI

Births and Deaths per 1000 Population in Puerto Rico,
Calendar years 1935, 1936, 1937, 1938, 1939,
and 1940.

Year	Births		Deaths	
	Number	Rate	Number	Rate
1935	67,585	40.4	30,753	18.4
1936	68,962	40.6	34,788	20.5
1937	67,919	38.3	37,132	20.9
1938	69,823	38.7	33,870	18.8
1939	73,044	39.8	32,631	17.8
1940	72,388	38.7	34,477	18.4

Source: Compiled from "Annual Book on Statistics, 1939-40," Puerto Rico Department of Agriculture and Commerce.

The results of a high birth rate under unsatisfactory economic conditions are easily seen in Puerto Rico. The excess of the supply over the demand of labor results in the Island in very low wages and, therefore, in low purchasing power for the great mass of workers who have to support

(1) Cordero, Rafael de J., "The Problem of Overpopulation in Puerto Rico," P.R.R.A., 1936 (Typewritten).

and social status. Although the study of women in rural
 population is interesting, the subject is still preliminary.
 It is not yet clear, for example, what part of the people
 living in areas of rural population are interested in 1930.
 The study of women workers in rural areas, and in the
 rural population in the middle class and the upper middle
 class, is still in the early stages of development.
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 rural population in the middle class and the upper middle
 class, is still in the early stages of development.

TABLE II

Married and Single per 1000 Population in Rural Areas,
 1920-1930, 1935, 1940, 1945, and 1950

Year	Married	Single	Ratio
1920	67.5	32.5	2.08
1930	68.5	31.5	2.18
1935	69.5	30.5	2.28
1940	70.5	29.5	2.38
1945	71.5	28.5	2.48
1950	72.5	27.5	2.58

Source: Based on data from the Bureau of Census, 1920-1950, Series 1000.
 Department of the Interior, Bureau of Land Management.

The results of a high birth rate and a high death rate are
 conditions are not yet clear in rural areas. The results of the study were
 the amount of labor needed in the field is very low, and, therefore,
 in the purchasing power for the goods and services and the need to export

(1) Source: Based on U.S. Department of Agriculture, "Rural Areas,"
 U.S.A., 1950 (Washington).

very large families. The low income, both in terms of money and in terms of buying power, does not permit good housing conditions, and condemns the majority of the workers to live in rural huts or in town slums, where sanitary conditions are far from good. Low income does not make possible an adequate diet for the workers or their children which results in very poor nourishment and makes the children easy prey for intestinal diseases, uncinariasis, tuberculosis and malaria. Both workers and their families begin life physically and economically handicapped.

The high birth rate in Puerto Rico not only reduces the chances of the workers to improve their economic and social status, but creates for the government serious health, housing, and educational problems. This latter aspect of the population problem is discussed in Section 7-a of this same chapter. (1)

b. The Death Rate.--Another explanation of the rapid increase in numbers in Puerto Rico is the death rate. The death rate in the Island increased between 1935 and 1937 from 18.4 to 20.9 per 1000 population, decreased to 17.8 in 1939, and rose again to 18.4 per 1000 population in 1940. The average death rate for the quinquennium 1935-39 was 19.3 as compared with 20.6 for the previous quinquennium, 1930-34. If one takes as a basis the figure for the first quinquennium of the present century (1900-04) one finds that the death rate as compared to that of 1939 has declined from 27.1 to 17.8 per thousand, a drop of about 34.3 per cent. Intervention in the form of modern medicine and sanitation account largely for this substantial reduction. The consequence of the continuous reduction

(1) Refer to Page 30.

very large families. The low income, both in terms of money and in terms of buying power, does not permit of having more children, but it does not prevent the majority of the workers in the industrial sector from having large families. The conditions are not good, but income does not seem to be the only factor that determines the number of children. The conditions of health and nutrition are also very important. The government must take the children into account in its educational program, and must also take into account the conditions of health and nutrition. The government must also take into account the conditions of health and nutrition.

The high birth rate in Brazil does not only reflect the conditions of the workers in general, but also reflects the conditions of the government sector. The government sector is also responsible for the high birth rate. The government sector is also responsible for the high birth rate. The government sector is also responsible for the high birth rate.

(1) This same chapter.

2. The Birth Rate. - Another expression of the high birth rate in Brazil is the fact that the birth rate has increased between 1950 and 1955 from 14.4 to 15.5 per 1000 population. In 1950, the average birth rate for the population was 14.4 per 1000 population. In 1955, the average birth rate for the population was 15.5 per 1000 population. In 1960, the average birth rate for the population was 16.6 per 1000 population. In 1965, the average birth rate for the population was 17.7 per 1000 population. In 1970, the average birth rate for the population was 18.8 per 1000 population. In 1975, the average birth rate for the population was 19.9 per 1000 population. In 1980, the average birth rate for the population was 21.0 per 1000 population. In 1985, the average birth rate for the population was 22.1 per 1000 population. In 1990, the average birth rate for the population was 23.2 per 1000 population. In 1995, the average birth rate for the population was 24.3 per 1000 population. In 2000, the average birth rate for the population was 25.4 per 1000 population. In 2005, the average birth rate for the population was 26.5 per 1000 population. In 2010, the average birth rate for the population was 27.6 per 1000 population. In 2015, the average birth rate for the population was 28.7 per 1000 population. In 2020, the average birth rate for the population was 29.8 per 1000 population. In 2025, the average birth rate for the population was 30.9 per 1000 population. In 2030, the average birth rate for the population was 32.0 per 1000 population. In 2035, the average birth rate for the population was 33.1 per 1000 population. In 2040, the average birth rate for the population was 34.2 per 1000 population. In 2045, the average birth rate for the population was 35.3 per 1000 population. In 2050, the average birth rate for the population was 36.4 per 1000 population. In 2055, the average birth rate for the population was 37.5 per 1000 population. In 2060, the average birth rate for the population was 38.6 per 1000 population. In 2065, the average birth rate for the population was 39.7 per 1000 population. In 2070, the average birth rate for the population was 40.8 per 1000 population. In 2075, the average birth rate for the population was 41.9 per 1000 population. In 2080, the average birth rate for the population was 43.0 per 1000 population. In 2085, the average birth rate for the population was 44.1 per 1000 population. In 2090, the average birth rate for the population was 45.2 per 1000 population. In 2095, the average birth rate for the population was 46.3 per 1000 population. In 2100, the average birth rate for the population was 47.4 per 1000 population.

in the death rate has been a gradually increasing rate of natural growth in the population. Puerto Rico has a crude rate of natural increase of about 21 per thousand inhabitants. The survival rate has experienced almost unnoticeable fluctuations in recent years and in 1939 it remained at the same figure as in 1935, that is 22. For 1940, the rate was 20.3.

Table VII

Death Rates per 100,000 Population from Important Causes,
1934-1939.

Causes of Death	Rates per 100,000 Population						
	1939	1938	1937	1936	1935	1934	
Diarrhea Enteritis:	399.7	-----	484.4	488.2	368.6	362.8	
Tuberculosis	258.4	274.5	287.1	305.3	304.5	308.3	
Pneumonia	177.9	175.0	187.8	161.9	155.5	146.0	
Disease of the							
Heart	116.2	119.8	116.6	114.0	97.4	104.2	
Nephritis	108.0	112.7	127.5	125.1	133.7	130.8	
Diseases of early							
infancy	101.2	102.7	103.4	105.6	98.2	101.3	
Malaria	89.1	108.7	129.5	141.1	126.2	152.8	

Source: Compiled from "Annual Book on Statistics," P.R. Department of Agriculture and Commerce, 1939-40.

Puerto Rico's death rate is still high compared to rates prevailing in Western Europe and in the United States. This high death rate is due to the difficulties encountered by the health authorities of the Island in trying to cope with such maladies as tuberculosis, diarrhea and enteritis, malaria, diseases of early infancy, influenza, and bronchitis. The leading cause of mortality results from diarrhea and enteritis, the rate of 399.7 per 100,000 population (1939) being almost six times the rate in Kentucky, and over 35 times the rate in Rhode Island. Tuberculosis constitutes the second leading cause of death. The mortality rate from this disease in

the Island is opined to be higher than in any other civilized country in the world. Pneumonia ranks third among the causes of death. In 1939 this disease claimed 177.9 per 100,000 people (see Table VII).

The highest mortality rates in Puerto Rico are found in municipal districts or near the coast where malaria is prevalent. Low mortality rates exist in the interior, mountainous districts, where conditions of living are more healthful and density is not so high. The latter fact explains why the average death rates in the coffee regions are consistently lower than the rates for the Island as a whole.

Death rates among the ten municipalities which ranked highest in 1940 ranged from 22.3 to 29.5 per 1,000 population. It is remarkable to observe that the same conditions which in some municipalities have brought about a high birth rate have also created a high death rate. This is true, for example, of Bayamon, Sabana Grande, Patillas, and Santa Isabel. These four municipalities rank among those having the highest birth rates and the highest death rates.

The following are the municipalities which appeared with the highest death rates in 1940:

Bayamon	29.5	Anasco	23.1
Rio Piedras	25.1	Santa Isabel,	22.8
Mayaguez	24.4	Fajardo	22.5
Caguas	23.7	Patillas	22.5
Arecibo	23.6	Sabana Grande	22.3

The average death rate for the ten municipalities ranking lowest in 1940 was 9.6 per 1,000 population. Again we find in here that most of the municipalities with a low birth rate have also a very low death rate. Ceiba, Culebra, and Morovis are good examples. Other cases are: Dorado, Naranjito, and Aibonito.

the lowest is found to be highest than in any other civilized country in the world. The average death rate among the negroes at home. In 1900 was 117.5 per 1,000 people (see Table VII).

The highest death rates in 1900 were found in Mexico, the Philippines, and the Hawaiian Islands. The death rates in these countries are much higher than in any other country in the world. The death rates in the United States are much lower than in any other country in the world. The death rates in the United States are much lower than in any other country in the world.

Death rates among the negro population which ranked highest in 1900 ranged from 117.5 to 118.5 per 1,000 population. It is noteworthy to observe that the same conditions which in some countries have brought about a high birth rate have also created a high death rate. This is true, for example, of Japan, where the death rate is high, and where the birth rate is also high. The same conditions which in some countries have brought about a high birth rate have also created a high death rate. This is true, for example, of Japan, where the death rate is high, and where the birth rate is also high.

The following are the death rates which appeared in the

highest death rates in 1900:

Japan	117.5	France	117.5
The United States	117.5	Germany	117.5
Sweden	117.5	Denmark	117.5
Norway	117.5	Switzerland	117.5
Austria	117.5	Holland	117.5

The average death rate for the United States in 1900 was 117.5 per 1,000 population. Again we find the same sort of conditions which in some countries have brought about a high birth rate have also created a high death rate. This is true, for example, of Japan, where the death rate is high, and where the birth rate is also high. The same conditions which in some countries have brought about a high birth rate have also created a high death rate. This is true, for example, of Japan, where the death rate is high, and where the birth rate is also high.

The following municipalities revealed the lowest death rates in 1940:

Culebra	7.7	Morovis	9.8
Naranjito	8.4	Corozal	10.1
Dorado	9.3	Ceiba	10.3
Trujillo Alto	9.3	Barranquitas	10.6
Guaynabo	9.6	Aibonito	10.8

D. Age Composition, Sex, and Growth by Race.

The classification of the Puerto Rican population by sex shows a perfect equilibrium between males and females, but about 75 per cent of the population is white and the rest is colored. According to the figures given

Table VIII

Age Distribution of the Population in Puerto Rico
Estimated as of July 1, 1939.

Age	Total	Per Cent	White	Colored
			Male	Female
All ages	1,837,210	100.0	709,089	708,255
Under 1 year	59,410	3.2	22,772	22,249
1 - 4 years	199,654	10.9	77,313	74,539
5 - 9 years	248,713	13.5	97,422	94,934
10 -14 years	240,878	13.1	92,632	91,230
15 -19 years	181,075	9.9	67,569	71,998
20 -24 years	240,356	13.1	90,061	95,561
25 -34 years	226,549	12.3	85,238	90,558
35 -44 years	191,713	10.4	74,304	74,103
45 -54 years	124,822	6.8	51,899	44,905
55 -64 years	66,521	3.6	27,855	24,320
65 -74 years	35,871	2.0	14,388	13,902
75 yrs. and over	21,648	1.2	7,606	8,956

Source: P.R. Department of Agriculture and Commerce, "Annual Book of Statistics," 1939-40.

in the above table there were in the white population 709,089 males and 708,255 females in July 1, 1939 as against 209,402 males and 210,464 females in the colored population. The proportion of males is larger for ages

below 15 and above 36, that of females is larger for ages 15 to 44. Such a distribution is undoubtedly favorable to mating and reproduction.

In Puerto Rico there is a high proportion of children and young population due no doubt to the high birth rate. About 40 per cent of the population is found in the lowest brackets, from under one year to fourteen years. The low proportion in the older ages (about 7 per cent of the population is above 64) may be traced to the same reason, accounting for the great number of young people and to the relatively high death rate.

E. Economic Factors Explaining How Numbers Have Increased So
Rapidly Without Aggravating The Maladjustment Between
Inhabitants And The Means For Their Support.

Rapid population increase has not resulted in serious aggravation of the present maladjustment between inhabitants and the means for their support, due largely to the extensive development of commercial agriculture in the Island, particularly in sugar cane, tobacco, and fruits, and for the substantial increase of work opportunities in such economic activities as transportation and commerce, manufacturing, mechanical industries, and the professional and public service fields. The development of high-yielding cash crops is attributable to the encouragement given by the creation of protected markets in the American continent. The most important consequences of the extension of this protection to Puerto Rican crops having a direct bearing on the increase in productivity of the Puerto Rican people have been the establishment of large sugar companies, the spread of techniques of sciences, as well as numerous skills and rich knowledge, the rise of huge corporations growing and manufacturing tobacco, the development of communication and transportation facilities, and the americanization of a large portion of the Puerto Rican people. It was the inclusion of this

below 15 and above 35, that of females is higher for ages 15 to 25.

A distribution is indicated, favorable to males and reproduction.

In Puerto Rico there is a high proportion of children and young

population, the rate is high birth rate. About 40 per cent of the

population is found in the lowest bracket. From under one year to fourteen

years. The low proportion in the older ages (about 5 per cent of the popula-

tion is above 64) may be traced to the same reason, accounting for the

great number of young people and to the relatively high death rate.

2. Economic Factors Limiting the Increase in the Population
Highly developed countries have a high birth rate
and a high death rate, but the balance is in favor of the former.

High birth rate in Puerto Rico has not resulted in a high population

of the present relationship between population and the means for their

support, due largely to the extensive development of commercial agriculture

in the island, particularly in sugar, coffee, tobacco, and fruit, and for the

extensive increase of work opportunities in such economic activities as

transportation and commerce, manufacturing, mechanical industries, and the

professional and public service fields. The development of high-yielding

cash crops is attributable to the development of the export of

protected crops in the American market. The most important com-

ponents of the extension of this protection to Puerto Rican crops having

a direct bearing on the increase in productivity of the Puerto Rican people

have been the establishment of large sugar plantations, the export of

techniques of science, as well as numerous skills and know-how, the

rise of large corporations growing and manufacturing tobacco, the development

of communication and transportation facilities, and the introduction of

a large portion of the Puerto Rican people. It was the isolation of this

people within the tariff walls of the United States which made possible an enlargement of the social income and the opening of new employment opportunities for a country which was already densely populated. It is undeniable that lands devoted to the production of sugar cane, tobacco, and fruits have brought to the Puerto Rican people more purchasing power than they would otherwise have obtained had these lands been devoted to the production of food crops.

Sugar Cane.---Sugar cane has increased considerably in importance during the present century as compared with the 19th century. Both yield and acreage are greater to-day than they were in 1897. Sugar yield to-day is about four times as much as it was at the close of the last century and the land devoted to cane is almost four times greater than in the year 1897. The increase in yield and acreage has also been accompanied by a substantial growth in the production and export value of sugar. While in 1897 sugar output was only 63,546 short tons, by 1940, it was 1,018,803 short tons. The value of sugar exported in 1897 was 4,007,992 pesos (1) as compared to \$57,328,790 in 1939-40.

Though population has doubled since 1897, the expansion of the sugar industry in per capita terms has been very large. In 1897 the per capita export value of sugar was \$2.69 (4.48 pesos); in 1940 it was \$30.13, or about 12 times as much.

The phenomenal growth experienced by the Puerto Rican sugar industry during the present century has been the result of radical improvements in methods of producing cane, and in the technique of processing it

(1) The peso was exchanged after 1899 at the official rate of 60 cents.

into sugar. Foreign capital investments, stimulated by the protection afforded by the United States tariff and low wages prevailing in the Island, have been a beneficial factor in speeding up this process.

Despite the many problems which the development of the sugar industry has created in the Island, its rapid and extensive growth has opened an increasing number and variety of opportunities for the employment of workers. In 1935, 94,718 persons reported gainful occupations on sugar cane farms. These, along with 16,162 persons gainfully occupied in sugar mills, and nearly 3,000 more, employed by the sugar mills in transportation, make a total of approximately 114,000 people engaged in sugar production in Puerto Rico. The industry also contributes to the support of additional salaried workers in trade, transportation, professional, and government services. Approximately 52 per cent of the Puerto Rican people depend wholly, or partially, on sugar.

Tobacco.---The tobacco industry in Puerto Rico has not experienced much of a spectacular growth, but in some respects its expansion has been relatively larger than that of the sugar cane industry. The acreage in tobacco to-day is ten times that of 1897. The value in dollars of unmanufactured tobacco exports has risen from 80 cents per capita in 1897, to \$9.35 in 1940. Tobacco farms provide the main basis of employment for about 38,000 gainful workers (38,186 in 1935) including farm operators. The leaf tobacco industry provides employment for about 16,000 workers, and hand stemming is estimated to account for about 80 per cent of the total employment of this industry.

Fruits.---Fruits were scarcely important in the Island's economy in 1897. Fruit exports in 1940 were valued at one and a half million

dollars, and fruit acreage in 1935, according to official records, was 25,356 acres. Fruits, however, have lost most of their importance as a source of purchasing power for the Puerto Rican people due to competition from continental areas, tariff concessions, and other factors to which reference is made in Chapter VII.

Manufacturing.---In spite of the fact that the Island had experienced some manufacturing growth up to the close of the 19th century, it was not until the 20th century that this field became a real source of income and employment to the Island. In 1936-37, manufacturing (construction included) accounted for about one-fourth of the total income from productive industries. Of 522,825 people gainfully occupied in the Island in 1935, 132,315, or 25.3 per cent, were in the manufacturing and mechanical industries. Approximately 70 per cent of all the persons reporting gainful occupations during this year were engaged in the clothing and needlework trades, 15 per cent in the cigar and tobacco factories, and about 7 per cent in the sugar mills and refineries.

Other Occupational Changes.---The expansion of the sugar, tobacco, fruit, and manufacturing industry, accounts for the greatest number of occupational opportunities of this Island during the present century, yet opportunities for employment in trade, transportation and communications, in professional, clerical and public service, have also expanded substantially. In 1899 there were only 26,270 persons gainfully employed in these fields, whereas in 1930 there were 83,076 engaged in such occupations, thus representing an increase of 22 per cent during this century, partly attributable to the economic development in the basic fields of commercialized agriculture and manufacturing.

F. Remedies to Overpopulation.

1. The Actual Dilemma.

Puerto Rico is to-day confronted with a unique situation. The continuous increase in the number of inhabitants coupled with the lack of natural resources, makes the application of a workable solution almost impossible. The present economic structure is unsound to a certain extent and highly artificial in that it depends on the existence of protected American markets. On the other hand, economic progress and the partial alleviation of the indigent condition of the workers would not have materialized had the lands not been devoted to a type of agriculture which warranted protective markets. The dilemma is discouraging. The establishment of a more dependable and stable type of agrarian economy would result in lower income per capita, in less possibilities of employment, and certainly in lower standards of living. The continuation of the present agrarian policy under the existing conditions of control and distribution will increase the Island's dependency upon an artificial set-up of questioned solidity.

2. Agricultural Prospects.

The increase in the Island's population has been accompanied by a proportionate increase in cultivated land which under improved methods of cultivation has come to yield high returns. This has helped in maintaining present standards of living and to postpone temporarily the increased pressure on the means of support. The ability of the Puerto Rican people to maintain actual levels of living in the future depends on how much more land can be appropriated to cultivation and on the possibilities of bettering the technique and methods being applied in agriculture. To make a forecast as to the chances of doing so would be a difficult task. According to the 1935 Census the Island had 1,483,683 cuerdas of land

classified as clear pasture and crop land, of which only 711,270 were actually harvested, while 116,080 remained idle. The margin within which any additional appropriation can be made is definitely narrow being restricted to about 600,000 cuerdas. However, one must not be misled by such figures. The additional improved land not under cultivation is land which is almost worthless for productive purposes, and little of it, if any, can be used to raise cash crops. Such an appropriation, however feasible, would have to make allowance for high additional costs, since the nature of the land warrants irrigation and drainage.

Possibilities exist of improving present methods and technique in the agricultural field, but to what extent they can be carried forward on a profitable basis is difficult to determine. One must bear in mind that the choice of methods and means in the case of a specialized agriculture depends normally on profit, which in turn depends on the relationship of costs to prices. To intensify cultivation would mean carrying production beyond profitable limits as evidenced by the inevitable appearance of diminishing returns in agriculture.

The possibilities of expanding our agricultural crops are also limited. The Puerto Rican commercialized agricultural sections are not at liberty to determine questions of land use merely on the basis of profitability or of commercial considerations. Their actions are immensely restricted, if not set, by national and Federal economic policy. To a great extent, therefore, crop raising and land appropriation are affected, if not fixed, by laws. Sugar production, by virtue of the Sugar Act of 1937, has been operating under quota restrictions; cigar-tobacco exports have decreased due to changed market conditions, and fruits, on the other

classified as sheep pasture and crop land, of which only 711,570 acres
 actually harvested, while 115,000 remained idle. The average wheat yield
 any additional appropriation can be made is relatively narrow being as-
 sessed to about \$10,000 per acre. However, one must not be misled by
 such figures. The additional improved land not under cultivation is land
 which is almost worthless for production purposes, and little of it, if
 any, can be used for other than crops. Such an appropriation, however
 feasible, would have to make allowance for high additional costs, since
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 great extent, therefore, crop raising and land appropriation are affected,
 if not fixed, by law. Such production, by virtue of the type and of
 1937, has been operating under more restricted agricultural export
 have necessitated the so-called sugar, coconut, and coffee, on the other

hand, are confronting continually intense competition from continental United States and other producers selling in the American market.

3. Industrial Prospects.

The feasibility of extensive manufacturing development has been the subject of more than one discussion in the island of Puerto Rico. Indeed, industrialization is considered by many as the only possible solution for the prevailing situation of unemployment and low wages. Industrialization, however, has been confined to a very limited field and most of it is an outgrowth of the present commercial agriculture.

The American immigration laws apparently have had an influence in the promotion of certain industries which have come to Puerto Rico because of the possibilities of exploiting a cheap labor market. Such is the case of the garment-making trade in the Island, the cutting and polishing of diamonds, the setting of jewels in the time pieces, etc. Most of the other lines which have developed are either a supplementary part of the specialized agriculture or industries supplying a local market.

The possibilities of industrial development are limited. The Island, no doubt, offers relatively promising field for small manufacturers producing goods of high value in proportion to bulk and weight and employing processes needing a large amount of manual labor. Such development, however, is not likely to solve the Island's unemployment problem and could do no more than slightly alleviate the desperate economic conditions created by the excessive number of inhabitants.

An authority has said:

"An industrialized region can support a dense population at higher standards of living than an agricultural region. Optimists look forward to the time when the Island becomes fully industrialized and is able to offer full employment

land, and continuing activity in various regions.

United States and other countries are in the same position.

3. Industrial Progress

The Government of various countries is now

the subject of some of the most important in the world.

Indeed, industrialization is considered by many as the only possible way

for the growing number of management and the world.

Industrialization, however, has been confined to a few countries and

it is an outgrowth of the present economic situation.

The American Government has been

in the position of various countries which have been in the same

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other lines which have developed and a large part of the

specialized agriculture or the world's economy.

The possibilities of industrial development are limited.

Indeed, no doubt, there are relatively few countries

producing goods of high value in proportion to the

processes leading to a large amount of waste.

over, it is not likely to solve the world's economic

as no more than slightly improve the economic situation

by the excessive number of industrial

An analysis of the

"An industrial system can support a large population in
higher standards of living than an agricultural system.
Optimists look forward to the day when the world's resources
will be utilized and in this to create full employment

to its dense population. Industrialization, however, does not grow out of thin air and hope. Fundamental factors which have concurred in other regions to promote industrial development are absent in Puerto Rico; mineral resources, a large home or foreign market, abundance of capital and raw materials or a control of the supply of the latter, trained personnel. Small manufacturing industries in which labor is an important item of cost and which the smallness of the local market or the absence of minerals are not essential limiting factors, will continue to grow in the Island. An industrial growth which according to known factors will be slow, offers limited possibilities towards the solution of an overpopulation problem which is now acute and which continues to grow worse every year." (1)

4. Migration.

Migration is not a solution to the problem of overpopulation in Puerto Rico. From time to time since American occupation hundreds of laborers have migrated from the Island to other areas in the tropics and to the continental United States. Migration in mass took place in 1900, to Hawaii, and following World War I a great number of Puerto Ricans were taken to Cuba and to Brooklyn to work in the sugar plantations and cordage factories of each respective country. In 1936, an attempt was made to take 1,500 Puerto Ricans to Arizona, part of which expedition never reached the Continent. Experience has shown that there are only limited areas in which mass migration would be successful, and that even then, no adequate relief of excessive population pressure can be expected through this means.

The number of laborers which the Caribbean countries and continental United States could accommodate would be negligible as compared with the Island's needs. While apparently a larger opportunity for these workers exists upon the Mainland, Puerto Ricans, in general, are not sufficiently adaptable to continental life to make a happy and permanent adjustment.

(1) Cordero, Rafael de J., "The Problem of Overpopulation in Puerto Rico," P.R.R.A., 1936 (Typewritten).

to the human population. Industrialization, however, does not grow out of thin air. It requires a certain amount of capital which has accumulated in other spheres of human activity. Development and growth in human life, material resources, a large mass of human energy, abundance of capital and new methods of a country or the supply of the labor, trained personnel. Such a man-made situation in which labor is an important item of cost and which can be used in the most efficient manner for the maximum of material and human well-being, will continue to give in the future. An industrial growth which necessarily is based on the fact will be also, often limited possibilities to overcome the situation of an overpopulation problem which is now acute and which continues to grow more every year. (1)

4. Discussion

Migration is not a solution to the problem of overpopulation in Puerto Rico. From time to time since American colonization of the island have migrated from the island to other areas in the world and to the continental United States. Migration is now taking place in 1950, to Hawaii, and following World War I a great number of Puerto Ricans were taken to Cuba and to Brooklyn to work in the sugar plantations and garment factories of each respective economy. In 1950, an attempt was made to take 1,000 Puerto Ricans to Alaska, part of which expedition never reached the Continent. Experience has shown that there are only limited areas to which mass migration would be successful, and that even then, the expense of excessive population pressure can be expected through the medium. The number of laborers within the United States and the United States itself would be negligible as compared with the island's needs. While apparently a larger opportunity for those who leave from the island, Puerto Ricans, in general, are not voluntarily prepared to continental life to make a happy and permanent adjustment.

(1) Goveas, Daniel de J., "The Problem of Overpopulation in Puerto Rico," S.S.A.A., 1955 (typewritten).

The ability of Puerto Rican workers (especially that portion of a low social and economic status) to improve their economic condition in continental United States will depend to a large extent upon some command of the English language and some previous skill in industrial work. But even if they were able to have a command of the latter requisites, the United States with its own unemployment problems, cannot absorb sufficient numbers to alleviate even temporarily Puerto Rico's acute problem of overpopulation.

Emigration offers no real permanent solution to overpopulation, because it does not attack the basic problem of a high birth rate and comparatively low death rate. If the problem were to be solved by mass migration about 40,000 people yearly would have to be transported to other countries. Such an undertaking would hardly be practical. Aside from the difficulties offered by such factors as a favorable attitude on the part of other countries to absorb 40,000 Puerto Ricans yearly and by the need of transporting these people to the new lands, there is the question of raising the initial capital essential to the accomplishment of such a task. Economic and financial conditions prevailing in Puerto Rico in no way make, or can make, allowance for such a possibility. The most sensible solution to the problem is a reduction of the birth rate to or below the level of the present death rate.

5. Reduction in the Birth Rate.

A reduction of the birth rate to or below the level of the death rate is the key to the entire overpopulation problem in Puerto Rico. The crude natural increase rate of 21 per 1000 population must be suppressed and, if possible, made to fall below the normal average death rate of 18 per 1,000 inhabitants. Application of an effective program of birth control is the best possible measure to accomplish this end.

The ability of these men to maintain (especially) that position of a low ex-
-cise and economic interest to improve their economic position in the
-and United States will depend on a large extent upon their control of the
-English language and their position within the international community. They even
-they were able to have a statement of the latter organization, the United States
-with the two management positions, namely, the two positions of the
-alliance even though the latter has a strong position of organization.
-organization within the two positions of the organization.
-because it does not allow the two positions of a high level and the
-generally low level rate. In the position of the two positions of the
-position about 60,000 people have been in the position of the
-position. Such an organization will have to be organized. Such a
-organization of the two positions of a two-position position in the
-at other positions is about 10,000 people in the position of the
-of organizing these people in the two positions, there is the possibility
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-position and financial position prevailing in the two positions of the
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The application of an effective birth control program, however, is beset with innumerable difficulties because of the peculiar economic conditions in which the Puerto Rican people live. The abject material poverty of the masses, the high proportion of population living in rural areas, the attitude of the church and the State, and the low level of economic culture and ambition of the majority of the agrarian workers, are among the many factors which a birth control program would have to face.

To be effective a program of birth control must embrace far more than the dissemination of contraceptive methods. It must include a good program of education designed not only to create a higher sense of parental responsibility among the working classes, but also to raise the present standards of living and to encourage social activities, such as, sports, dances, picnics, etc. Family ties should be strengthened, and education, social service, religious institutions and other similar entities should cooperate in an effort to reduce the marriage rate and in discouraging illegitimate unions.

In concluding, it is well to remember the words of Zimmermann as found in his report to the interdepartmental committee on Puerto Rico:

"In the long run.....

Unless the population problem is solved, all else is 'whistling in the wind.'

It cannot be solved.....

Unless every reasonable encouragement is given to the economy of the Island." (1)

(1) Zimmermann, Erich W., "Staff Report to the Interdepartmental Committee on Puerto Rico," Washington, D.C., 1940, Page 56.

The significance of an effective birth control program, however, is based not on the immediate reduction of the population but on the conditions in which the present generation lives. The object material of the program, the high proportion of population living in rural areas, the structure of the church and the state, and the low level of economic culture and education of the majority of the population, are among the many factors which a birth control program should take into account. To be effective a program of birth control must address the more than the immediate reduction of the population. It must include a program of education designed not only to reduce the birth rate but also to improve the economic and social conditions of the people, and to raise the general level of living and to encourage social activities, such as sports, games, dances, etc. Birth control should be regarded as a part of education, social service, religious instruction and other social activities. The state should support in all efforts to reduce the birth rate and in the economic development of the people.

In conclusion, it is well to remember the words of the author as found in his report to the Inter-Parliamentary Commission on Birth Control:

"In the long run, all nations the population problem is solved, all also is 'settling in the world'. It cannot be solved..... unless every individual understands it as so the people of the world." [1]

CHAPTER III

AGRICULTURAL ORGANIZATION

A. Importance of Agriculture in the Island's Economy.

1. Dependency on Agriculture.

Since most of Puerto Rico's income is obtained from agriculture, her prospective returns from this field are of paramount importance in making any forecast relative to her economic and social betterment. We have seen that the Island is as to its natural resources but very poorly endowed. Mountains and other untillable areas occupy around two-thirds of its total land area. Many of the southern mountain slopes have been turned into arid waste lands which contribute nothing to the economic welfare of the people. Moreover, an important fraction of the low plain along the southern coast and a portion near the northwest corner are too dry for successful crop-raising except under irrigation.

Despite natural handicaps, agriculture is, and probably will continue to be, a potential source of employment and income to the Island. The 1935 Census, conducted under P.R.R.A. auspices, recorded a total of 522,825 persons 10 years old and over in gainful occupations. Out of this total, 246,386 persons, or about 47 per cent, were gainfully employed in agriculture. The total included 50,003 farmers (owners and tenants), 9,660 farm managers and foremen, and 186,723 farm laborers.

Agriculture also furnishes the basis for at least three-fourths of the Insular revenue. It provides the basis of income for a much larger percentage of the people in Puerto Rico than in the United States, despite the desperate economic conditions facing the Island. From 1929 to 1937, it was responsible for 77 per cent of the income from productive endeavors,

THE ECONOMIC SITUATION

1. THE ECONOMIC SITUATION IN THE ISLANDS

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The economic situation in the islands is characterized by a high degree of dependence on the outside world.

One of the main features of the economic situation in the islands is the high degree of dependence on the outside world. This is due to the fact that the islands have no significant natural resources and are therefore unable to produce the goods and services they need. The islands are therefore heavily dependent on imports from the outside world. This dependence is particularly acute in the case of food and clothing, which are essential for the survival of the population. The islands are also heavily dependent on the outside world for their main source of income, which is derived from the sale of their products to the outside world. This dependence on the outside world is a major factor in the economic situation of the islands and is a major cause of their economic problems.

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and 49 per cent of the total Insular revenue. In 1935, 47 per cent of all persons, or 62 per cent of the male population gainfully employed, reported agricultural pursuits. Occupational statistics for United States for 1930, show only 21 per cent of all persons, or 25 per cent of the male population who worked for gain, as following agricultural pursuits.

The agricultural income is widely distributed in the Island. A large percentage of the gross farm income goes to labor. In 1935, 35 persons reported gainful agricultural pursuits for each 100 acres of cropland. From 1933 to 1937, agricultural income in the Island averaged \$74,200,000 per year. This was \$140.43 per cuerda on the basis of the number of cuerdas of cropland harvested in 1935.

2. Agricultural Trade.

More than two-thirds of the Island's income from sales in foreign markets comes from products of the soil. During the quinquennium 1930-34

Table IX

Exterior Agricultural Trade of Puerto Rico and other Caribbean Areas

Country	: Area in : Popula- : Average : Sales of		
	: Square : tion in : Exterior: Agricultural Products		
	: Miles : 1934 : Sales :		
	: Number : 1000 : \$1000 : Per Sq. Mile: Per Capita		
Puerto Rico	: 3,435 : 1,678 : 72,307: \$21,050.07 : \$43.09		
Cuba	: 44,164 : 3,988 : 103,936: 2,353.41 : 26.06		
Santo Domingo	: 19,332 : 1,325 : 12,282: 635.32 : 9.27		
Haiti	: 10,204 : 2,600 : 9,660: 97.66 : 3.72		
Venezuela	: 352,143 : 3,324 : 13,412: 38.09 : 4.03		

Source: Association of Sugar Producers of Puerto Rico, "Some Standards for Measuring Puerto Rico's Economic and Social Progress," Washington, 1937.

the Island's annual sales of agricultural products to foreign countries averaged \$43.09 per capita, or \$21,050.07 per square mile of total

territorial area. The per capita exterior sales exceeded those of Cuba and Haiti by 65 per cent and 1150 per cent respectively, and were approximately five times as great as those of Santo Domingo (see Table IX).

Raw agricultural products comprised 69 per cent of the exterior sales in 1938, and all local agricultural products, both raw and finished, were responsible for 85 per cent of the sales from the Island. Local agricultural products supply the basis of a big portion of all manufacturing done in the Island and are responsible for more than 50 per cent of the finished products sold in outside markets. According to the Governor's Annual Report corresponding to 1940-41, Puerto Rican exports to outside markets amounted to about \$85,000,000. Agricultural products, particularly sugar, dominate the export trade. The most important agricultural export figures for the mentioned year, including both raw and manufactured products were as follows: (1)

Vegetables and Preparations.....	\$ 258,361
Fresh Fruits and Preparations.....	1,451,409
Nuts.....	363,221
Coffee.....	767,560
Sugar and Related Products.....	58,618,187
Beverages.....	6,949,082
Tobacco and Manufactures.....	7,780,917
Raw Cotton.....	283,120

3. Food Production.

In Puerto Rico, as in many other areas confronting an overpopulation problem, food supply is of paramount importance. Though commercial crops have absorbed the best and largest tillable land areas, a number of food crops are grown for local consumption, either in small acreages or in the cities and towns. The most important of these are root crops, such as corn, dry beans and peas, sweet potatoes, names, yautias, and yuccas. These food crops absorbed 180,801 acres of the cropland

(1) Forty-First Annual Report of the Governor of Puerto Rico, Pages 104-108.

harvested in 1935, but supplied only about 8 per cent of the agricultural income. A great portion of the root crops are sold off the farm. Roughly 50 per cent are consumed right on the producing areas and 50 per cent are sold. The small farms devoted to cash crops usually grow some of the food crops also. In these instances, food crops integrate a substantial part of the total value of agricultural production. The following table shows the number of farms growing the various root crops, the crop acreage harvested, the output, and the yield per acre.

Table X

Acreage Production, Yield and Value of
Subsistence Crops Grown in Puerto Rico, 1935.

Crop	: Number : of : Farms	: Acres : Harvested : Total : Per : : Farm :	: Production: : in : : 1,000 : : Units :	: Yield : : per : : Acre :	: Total : Value
Corn	: 25,298	: 49,820 : 1.97:	565 bu.:	11.3 bu.:	\$ 554,000
Rice	: 6,233	: 9,386 : 1.51:	4,891 lb.:	521 lb.:	196,000
Dry Beans	: 25,202	: 31,470 : 1.25:	13,501 lb.:	429 lb.:	675,000
Dry Peas	: -----	: 19,333 : ----:	12,463 lb.:	546 lb.:	498,000
Irish Potatoes	: 597	: 680 : 1.14:	23 bu.:	33.5 bu.:	102,000
Sweet Potatoes	: 31,759	: 36,947 : 1.16:	1,485 bu.:	40.2 bu.:	408,000
Names	: 11,468	: 7,966 : .69:	20,098 lb.:	2,523 lb.:	251,000
Yautias	: 20,686	: 17,596 : .85:	34,129 lb.:	1,940 lb.:	205,000
Yuccas	: 9,508	: 6,846 : .72:	12,808 lb.:	1,871 lb.:	45,000
Other	: -----	: 757 : ----:	-----	: -----	3,500
TOTAL.....	: :	: 180,801 : :	: -----	: -----	: \$2,937,500

Source: Smith, Dudley, "Income Problems in Puerto Rico", Association of Sugar Producers of Puerto Rico, Washington, 1939.

4. Assessed Value of Rural Property.

Property used in agriculture constitutes a substantial part of the wealth of the Island. Statistical data available for the fiscal year 1939-40 shows an assessed valuation of \$311,800,349 for all kinds of property in Puerto Rico. Urban lots and improvements were valued at \$103,578,985, while rural real property was assessed at \$155,447,285. Rural

assessed values for lands and improvements constituted about 60 per cent of the total assessed valuation of real urban and rural property, and about 50 per cent of the total assessed value of all kinds of property on the Island (see Table XI).

Table XI

Assessed Value of Real Property, by Classes
Fiscal Year, 1939-40.

REAL PROPERTY:

Urban:

Lots	\$31,042,470	
Improvements	<u>72,536,515</u>	
Total Urban		\$103,578,985

Rural:

Cane	51,514,095	
Coffee	2,533,000	
Tobacco	874,605	
Pineapples	373,180	
Oranges	858,290	
Coconuts	1,042,555	
Minor Fruits	4,882,190	
Pasture	39,518,910	
Timber and Brush	5,307,670	
Marsh Lands	224,445	
Other Lands	<u>647,835</u>	
Total Lands		\$107,776,775

Rural Houses	5,159,025	
Buildings and Machinery:		
Sugar	25,957,510	
Other	3,431,970	
Electric Plants	3,661,520	
Telephone	1,463,545	
Track and Railroad St.	4,903,660	
Other Improvements	<u>3,093,280</u>	
Total Improvements		<u>47,670,510</u>
<u>TOTAL REAL PROPERTY</u>		<u>\$259,026,270</u>

Source: P.R. Department of Agriculture and Commerce, "Annual Book on Statistics," 1939-40.

B. Land Utilization.

1. Major Land Uses in 1935.

The total land area of Puerto Rico was put by the 1935 Census at 2,113,704 cuerdas. Of the total land area about two-thirds is located in the mountainous regions of the interior, while approximately one-third is in the coastal section of the Island. The latter consists mainly of gently rolling plains. All land in farms in 1935 constituted 90.5 per cent of the total land area, against 93.6 per cent for 1930. Total cropland (harvested and idle) amounted to 827,350 cuerdas. The harvested cropland represented .41 cuerdas per capita as contrasted with .50, .49, .51, and .49 for the years 1899, 1909, 1919, and 1929 respectively. The corresponding figure for 1942 is estimated at .40 cuerda. Table XII, based on the 1935 Census, shows how the land in Puerto Rico was utilized that year:

Table XII

Major Land Uses in Puerto Rico, 1935.
(in cuerdas)

Pasture:

Clear	656,333	
Woodland	<u>97,976</u>	754,307

Cropland:

Harvested	711,270	
Idle	<u>116,080</u>	827,350
Other Woodland in Farms		119,267
All other land in farms		<u>212,121</u>
All land in farms		1,913,047
All land in Puerto Rico		2,113,704

Source: P.R.R.A., 1935 Census of Puerto Rico.

The total number of cuerdas reported as land in farms included not only cultivated land, but also all the fields, pasture, brush, woods,

and waste land which were a part of the farm. Under cropland harvested the total number of cuerdas of land cultivated and harvested, including land occupied by coffee, fruit, coconuts, and family home gardens, were enumerated. The meaning of harvested and "idle" cropland varied with different crops. Thus the land in sugar cane under "gran cultura" which was not harvested during the season 1935 was nevertheless counted as cropland harvested. On the other hand, large sections of the coffee region were included under harvested cropland though yields were unprofitable.

2. Land Utilization by Types of Farms.

Of all land in farms in 1935 sugar-cane lands constituted the major land use item. The lands in sugar cane represented 39.6 per cent of

Table XIII

Number and Acreage of Farms, by Type: 1935.
(in cuerdas)

Type of Farm	No. of Farms	All land in Farms	Cropland (cuerdas) Total	Pas- ture (cdas)	Other Wood- land	All Other Land
All farms	: 52,790	: 1,913,047	: 827,350	: 711,270	: 116,080	: 754,309
Sugar-Cane	: 6,620	: 758,834	: 346,154	: 209,939	: 46,215	: 312,791
Coffee	: 9,644	: 401,342	: 208,384	: 189,737	: 18,647	: 98,399
Tobacco	: 13,016	: 252,225	: 105,494	: 85,019	: 20,475	: 99,041
Coffee-Tobacco	: 1,596	: 65,196	: 30,248	: 24,992	: 5,256	: 20,667
Minor Crops	: 18,753	: 243,657	: 103,251	: 84,238	: 19,013	: 92,001
Other lands	: 3,161	: 191,793	: 33,819	: 27,345	: 6,474	: 131,410
Per Cent	: 100.0	: 100.0	: 100.0	: 100.0	: 100.0	: 100.0
Sugar-Cane	: 12.5	: 39.7	: 41.8	: 42.2	: 39.8	: 41.5
Coffee	: 18.3	: 21.0	: 25.2	: 26.7	: 16.1	: 13.0
Tobacco	: 24.7	: 13.2	: 12.8	: 12.0	: 17.6	: 13.1
Coffee-Tobacco	: 3.0	: 3.4	: 3.7	: 3.5	: 4.5	: 2.7
Minor Crops	: 35.5	: 12.7	: 12.5	: 11.8	: 16.4	: 12.2
Other lands	: 6.0	: 10.0	: 4.1	: 3.8	: 5.6	: 17.4

Source: P.R.R.A., 1935 Census of Puerto Rico

all land in farms as compared to 20.9 per cent in coffee, 13.2 per cent in tobacco, and 26.3 per cent in all other uses, including coffee-tobacco farms, minor crops farms, and other unclassified farms. On the basis of cropland harvested, sugar-cane lands again took the lead. Harvested land in sugar cane represented 29.5 per cent as contrasted to 26.7 per cent and 11.9 per cent in coffee and tobacco respectively (see Table XIII). Though not shown in the table, the value of sugar cane land and buildings was 56 per cent of the total value of land and buildings in all farms against 16.5 per cent for coffee and 8.2 per cent for tobacco. Sugar-cane land and buildings value per cuerda was 1.8 times, and about 2.2 times, as great as that for coffee and tobacco respectively.

3. Land Use by Major Crops.

Table XIV shows the acreage devoted to the cultivation of major crops in Puerto Rico for census years 1899 to 1935.

The sugar cane acreage increased from the low figure of 70.1 thousand acres in 1899 to 305 thousand acres estimated for 1939. This represents an increase of 335 per cent in 40 years. Such tremendous increase in cane acreage may be ascribed to the profitability of using lands in this product after the inclusion of the territory within the protective tariffs of continental United States.

The coffee acreage did not suffer substantial changes during the whole period. Coffee figures, however, are misleading. Loss of European markets, the greater profitability in sugar cane production, and the damages inflicted by the San Felipe and San Ciprian hurricanes virtually condemned the coffee industry to bankruptcy, so that until the 1932 hurricane little coffee was being grown, and that little was consumed mostly in the Island. By 1932 coffee regions had lost their importance as export-producing

Table XIV

Crop Acreage Harvested in Puerto Rico, 1899-1939.
(in thousands of acres)

Crop	1899	1909	1919	1929	1935	1939
Sugar Cane	70.1	145.4	227.8	237.8	238.1	305.0
Coffee	191.4	186.9	193.6	191.7	177.1	180.0
Tobacco	5.8	22.1	39.1	52.9	44.4	18.0
Corn	17.6	56.6	58.8	70.2	48.4	-----
Sweet Potatoes and Yams	38.1	-----	31.5	47.6	35.9	275.0
Beans (dry)	-----	20.7	34.9	40.9	30.6	-----
Peas	-----	6.9	3.1	8.4	15.5	-----
Rice	8.4	16.1	11.7	5.2	9.1	-----
Vegetables	-----	68.2	32.4	-----	-----	-----
All other crops	60.3	18.4	24.9	52.8	91.3	-----
Total Cultivated	391.5	542.7	660.6	737.9	691.2	778.0
Total except Coffee	200.1	355.8	467.0	546.2	514.1	598.0
Total except cof- fee and sugar	130.0	210.4	239.2	308.4	276.0	293.0

Source: Zimmermann, Erich W., "Staff Report to the Interdepartmental Committee on Puerto Rico," Washington, 1940.

areas and had become mainly a source of local food supply. Such facts indicate that a large portion of the acreage recorded as in coffee through the period under consideration should have been really included under "all other crops."

The tobacco acreage more than tripled from 1899 to 1909, increased two-fold from 1909 to 1935, and dropped to an estimated low figure of 18 thousand acres in 1939. Market difficulties and production control under the AAA program apparently constitute the reasons for the drastic curtailment since the beginning of the thirties.

The reduction in acreage devoted to corn, sweet potatoes, yams, and dry beans, since the beginning of the last decade up to 1935, is due principally to the reduced purchasing power of the laboring population

occasioned by the restriction of sugar production under quota laws, the decline of tobacco production, the virtual bankruptcy of the coffee-growing industry, and the marketing difficulties lately encountered in the fruit industry which have conducted to a sharp decline of the industry.

4. Farm Classification by Size and Type.

According to the 1935 Census farms having less than three cuerdas but no more than five cuerdas were the most numerous, and constituted 28.8 per cent of all farms (see Table XV). These farms, however, comprised

Table XV

Number of Farms by Size and Type: 1935.

Size of Farm : (cuerdas)	: All farms	: Sugar: Cane	: Tobac-: Coffee:	: Minor : Crops	: Other Farms
Based on	: Per	: :	: co	: co	:
Cropland	: Number: Cent	: Number: Number: Number: Number: Number: Number			
All farms	: 52,790: 100.0:	6,620:	9,644:	13,016:	1,596: 18,753: 3,161
Under 3	: 12,443: 23.6:	808:	1,558:	2,499:	62: 5,649: 1,867
3 - 5	: 18,916: 35.8:	1,682:	2,659:	5,458:	364: 8,210: 543
6 - 9	: 8,629: 16.3:	1,142:	1,717:	2,471:	350: 2,753: 196
10 - 14	: 4,563: 8.6:	744:	1,094:	1,159:	291: 1,127: 148
15 - 19	: 1,956: 3.7:	423:	468:	459:	134: 398: 74
20 - 34	: 2,829: 5.4:	706:	829:	572:	194: 409: 119
35 - 49	: 1,053: 2.0:	301:	339:	184:	85: 91: 53
50 - 99	: 1,318: 2.5:	415:	514:	149:	75: 76: 89
100 - 199	: 654: 1.2:	205:	290:	54:	31: 31: 43
200 - 499	: 333: 0.6:	126:	156:	11:	9: 9: 22
500 and over	: 96: 0.2:	68:	20:	-----:	1: -----: 7

Source: Compiled from P.R. Census, 1935.

only 59,448 cuerdas, or 3.1 per cent of the total area in farms, and, but 5 per cent of the total cropland. In the same year only 335 farms had 500 cuerdas or more, but these constituted 34.7 per cent of the total area in farms, and 30.9 per cent of the total harvested and idle land.

On the basis of total cropland, 84.3 per cent of the total number

of farms lay within the lowest brackets from under three cuerdas to fourteen cuerdas, while 15.7 per cent lay in the higher brackets. This was true of all types of farms.

C. Land Tenure.

1. General Aspects of the Tenure Problem.

It has been frequently stated that the prevailing situation as to land ownership and land tenure in Puerto Rico has had a marked influence on the structure of its agrarian economy. The idea seems to prevail that the development of large-scale farming and the prevalence of corporate control in the production of sugar cane, tobacco and fruits, has tended to handicap the production of food crops and to aggravate seriously the living conditions of a vast number of small farmers who could profitably use for food production and living purposes most of the land under the ownership or control of large interests dominating the production of the staple export crops. This idea is clearly incorporated in a recent law approved by the Legislature of the Island in an effort to put an end to a further spread of these conditions. From this I quote:

"It is a common knowledge that the greater part of the best tillable land of the Island is controlled by a few partnerships and corporations and by a scant number of natural persons. The lives of hundreds of thousands of human beings, in their social, moral and political phases, depend in a great measure on the entities who monopolize the land. The economic power of such entities threatens to dominate the political power of the people, thereby tending to transform into a plutocracy of a marked feudal character, what should be a pure democracy. The sugar latifundia has spread its tentacles within the vast area of its dominions, to the operation of commercial and industrial establishments, and of grocery and general stores; has limited the circulation of money, has caused the annihilation of communal life in many urban centers, and has made it impossible for thousands of human beings to be the owners of even the lot where their homes are situated, all to the consequent unbalancing of the economic structure of the Island and to the grave endangering of the peace, the tranquility, the dignity, and the economic and social freedom of the people of Puerto Rico."

(Act No. 26, 1941)

2. Present Status.

The following table shows how land ownership was distributed in Puerto Rico from 1910 to 1935:

Table XVI

Number, Acreage, and Value of Farms, by Tenure: 1910 to 1935.

	Number or Amount				Per Cent Distribution	
	1935	1930	1920	1910	1935	1910
All farms	52,790:	52,965:	41,078:	58,371:	100.0:	100.0
Owners	40,485:	43,101:	36,407:	46,779:	76.7:	80.1
Managers	2,414:	3,374:	1,213:	1,170:	4.6:	2.0
Tenants	9,891:	6,490:	3,458:	10,422:	18.7:	17.9
All land in farms (cdas)	1,913,047:	1,979,474:	2,022,404:	2,085,162:	100.0:	100.0
Owners	1,002,511:	1,166,976:	1,485,208:	1,457,345:	52.4:	69.9
Managers	708,293:	676,760:	351,335:	401,747:	37.0:	19.3
Tenants	202,243:	135,738:	185,861:	226,070:	10.6:	10.8
Ave. size of farms (cdas)	36.2:	37.4:	49.2:	35.7:	----	----
Owners	24.8:	27.1:	40.8:	31.2:	----	----
Managers	293.4:	200.6:	289.6:	343.4:	----	----
Tenants	20.4:	20.9:	53.7:	21.7:	----	----
Value of land & Buildings	\$156,278,450:	\$182,112,437:	\$151,283,818:	\$82,720,425:	100.0:	100.0
Owners	64,418,671:	94,616,503:	102,652,915:	46,669,331:	41.2:	56.4
Managers	79,300,918:	76,438,906:	35,963,000:	27,898,511:	50.7:	33.7
Tenants	12,558,861:	11,057,028:	12,667,903:	8,152,583:	8.0:	9.9
Average Value per Farm	\$2,960:	\$3,438:	\$3,683:	\$1,417:	----	----
Owners	1,591:	2,195:	2,820:	998:	----	----
Managers	32,850:	22,655:	29,648:	23,845:	----	----
Tenants	1,270:	1,704:	3,663:	782:	----	----
Average Value per Cuerda	\$81.69:	\$92.00:	\$74.80:	\$39.67:	----	----
Owners	64.26:	81.08:	69.12:	32.02:	----	----
Managers	111.96:	112.95:	102.37:	69.44:	----	----
Tenants	62.10:	81.46:	68.16:	36.16:	----	----

Source: P.R.R.A., 1935 Census of Puerto Rico.

The total number of farms in Puerto Rico has undergone no radical changes during the decades of the present century. In 1935 the total number of farms was 52,790, of which 40,465 were owned, 2,414 operated by managers, and 9,891 exploited by tenants. The number of farms owned represented 76.7 per cent of all lands in farms in 1935, while that under tenancy represented only 18.7 per cent. The relatively small proportion of tenants should not, however, be taken as evidence of dispersion of land ownership in the Island. To do so would be to ignore the existence of the landless farm laborers. A large number of the so-named farmers in Puerto Rico are really landless agricultural laborers who depend entirely on the receipt of wages for their living, but who, frequently, may be allowed to cultivate some land for their own benefit in the properties of their employer. This means that against 50,000 or more farmers possessing land, there must be taken into consideration about 160,000 landless farm laborers.

In 1935 there were 335 individuals, partnerships, and corporations possessing holdings of agricultural land in excess of 500 acres, who controlled in the aggregate 663,458 cuerdas or 34.7 per cent of all land in farms. The value of the land and buildings controlled by this group was \$72,872,033, or 46.6 per cent of the total valuation made for all other land in farms. (1)

3. Farm Ownership by Crops.

Further proof of poor diffusion of land ownership in Puerto Rico may be obtained through an analysis of farm ownership by crops. In the cane and sugar industry land tenure and control are closely concentrated. In 1935 this industry used 299,939 cuerdas for the production of sugar cane, or 42.2

(1) P.R.R.A., 1935 Census of Puerto Rico.

The total number of farms in Puerto Rico has undergone no real change during the decades of the present century. In 1923 the total number of farms was 32,750, of which 22,400 were owned, 1,416 operated by managers, and 8,934 exploited by tenants. The number of farms owned reported 75.7 per cent of all farms in 1923, while that under tenancy represented only 10.7 per cent. The relatively small proportion of tenants should not, however, be taken as evidence of displacement of land ownership in the island. To do so would be to ignore the extension of the landless class. A large number of the so-called tenants in Puerto Rico are really landless agricultural laborers who depend entirely on the receipt of wages for their living, but who, theoretically, may be allowed to cultivate some land for their own benefit in the proportion of their employment. This means that against 20,000 or more farmers possessing land, there must be taken into consideration about 150,000 landless farm laborers. In 1923 there were 225 municipalities, parishes, and corporations possessing holdings of agricultural land to an area of 200 acres, and controlled in the aggregate 253,455 acres or 22.7 per cent of all land in Puerto Rico. The value of the land was estimated by this group was \$75,375,000, or 40.6 per cent of the total valuation of the island for 1923.

(1)

2. Land Ownership in 1923

Further work on the allocation of land ownership in Puerto Rico may be obtained through an analysis of the ownership of sugar. In the same year sugar industry land tenure was almost entirely concentrated. In 1923 this industry used 237,125 acres for the production of sugar cane, or 42.2

per cent of the total cropland harvested in the Island that year. Around 70 per cent of the total sugar acreage is owned or controlled by sugar companies which are in the power almost exclusively of absentee stockholders. (1) These companies, most of which operate sugar mills, produce normally 59 per cent of the total sugar production of the Island, and control close to 50 per cent of the total agricultural wealth. The other 30 per cent of the sugar acreage is worked by independent growers, known as colonos. The 1935 Census recorded 7,693 growers of this type. Of these colonos approximately 100 are in a class by themselves. They operate large tracts of land on which considerable numbers of workers are employed.

The situation prevailing in the fruit industry, especially in grapefruit production, closely resembles that existing in the cane and sugar industry. In this industry there is a relatively small number of producers growing and packing fruit, and, here also, company control is the rule rather than the exception. Three organizations in the business have almost all the control and one company alone handles between one-fourth and one-third of all fresh fruit shipped from Puerto Rico. (2) The amount of foreign capital invested in fruit production is estimated at 2 million dollars as contrasted to 40 millions invested in sugar.

Coffee offers a wide diffusion of ownership. In 1935, 83 per cent of the coffee growing farms were operated by owners, 7.9 per cent by managers, and 9.2 per cent by tenants. Owners operated or controlled 70 per cent of the total cropland acreage devoted to coffee, managers 22.7 per cent, and tenants 7.3 per cent. Owners alone controlled 69.1 per cent of the total value of land and buildings in all coffee farms. The typical coffee farm

(1) Pico, Rafael, "Agricultural Problems of Puerto Rico," P.R.R.A., 1936, Page 23.

(2) Clark, Victor S., and others, "Porto Rico and its Problems," The Brookings Institution, 1930, Page 435.

averages from 3 to 14 cuerdas, the greatest percentage being found in farms from 3 to 5 cuerdas in size. Only 20 farms had an acreage exceeding 500 cuerdas in 1935, and constituted but 2 per cent of the total farms in coffee.

The wider diffusion of ownership in coffee-growing could be partly explained by two factors: (1) the rugged topography which discourages the growth of large-scale farming and application of machinery, and (2) the negative effect on profitableness of the absence of tariff protection. This unprofitableness is largely responsible for native control and operation of coffee farms, and thus, for the failure of absentee ownership to get hold of the coffee-growing areas. Moreover, even this diffusion of ownership is a mere illusion. The real owners of large portions of Puerto-Rican coffee-growing areas are banks who through foreclosure of mortgages have gained their control.

Ownership is apparently more diffused in the tobacco industry than in any other of the Island's industries. The typical tobacco farm is small--considerably smaller than typical farms producing other staple export crops. According to the 1935 census, 89 per cent of all tobacco farms had an average size of 3 cuerdas to 14 cuerdas, while not a single farm appeared to have in excess of 500 cuerdas. Over 40 per cent of the tobacco farms had not less than 3 cuerdas nor more than 5. The same census records 13,016 tobacco farms against 9,644 coffee and 6,620 sugar cane farms. Over 70 per cent of these farms were operated by their owners who had under control also about 70 per cent of the total assessed value of land and buildings in all tobacco farms. Among the tobacco growers, tenants constituted a larger percentage than in any other branch of agriculture. Over 25 per cent of the tobacco farms were under tenancy operation in 1935 as against 12.9 per cent in sugar and 9.2 per cent in coffee farms.

A study published in 1938 under the auspices of the Division of Agricultural Economics of the University of Puerto Rico, reveals that out of 270 tobacco farms investigated in 1936-37 the number of farms owned totally or in part by the operators made up 92.2 per cent of the total farms. Of this, 78.5 per cent was made up by farms totally owned by the operator or owned by the operator and worked with "medianeros". (1) This situation is considered to be typical of the whole industry.

The widest dispersion of farm ownership in Puerto Rico is really found in the growing of minor crops. The 1935 Census listed 18,753 farms in minor crop-growing as against 13,016 in tobacco, 9,644 in coffee, and 6,620 in sugar cane. The smallest farms are also found in this field. According to the mentioned Census, 94.6 of all farms in minor crops had an average size of from 3 to 14 cuerdas, while only 9 farms were recorded as having from 200 to 499 cuerdas. Over 76 per cent of these farms were operated by owners and 21.1 per cent by tenants. These farms produced crops for Island consumption, such as corn, rice, plantains, yautias, yams, avocados, beans and bananas.

4. The Land Authority of Puerto Rico.

Interest in the land tenure situation prevailing in Puerto Rico dates since 1900. In this year Congress members expressed their fear that the free trade between Puerto Rico and continental United States would convert the Island into too attractive a field for large investments in sugar and tobacco, with the probable consequence of bringing most if not all of the tillable soil under the ownership and control of sugar and tobacco trusts.

(1) Colon Torres, R., "Estudio Economico de 270 Fincas de Tabaco en Puerto Rico", Division de Economia Agricola, Universidad de Puerto Rico, 1938, Page 9.

To prevent the materialization of such fears, and to foster the division of lands into small tracts, owned, controlled, and operated by their owners, Congress enacted Joint Resolution No. 23, approved May 1, 1900, limiting corporate land holding to 500 acres. Subsequent events, however, were to prove the futility of such enactment. The 1900 Resolution became a dead and inoperative law for years and years, and concentration of ownership in the hands of a few made itself more critical. It was in an effort to put an end to corporate latifundia and to prevent their reappearance in the future that the Legislature of the Island approved in 1941, Law No. 26, creating "The Land Authority of Puerto Rico." Section 7 of the law reads:

"The Authority is created for the purpose of carrying out the agricultural policy of the People of Puerto Rico as determined in this Act, and to take the necessary action to put an end to the existing corporate latifundia in this Island, block its reappearance in the future, insure to individuals the conservation of their land, assist in the creation of new landowners, facilitate the utilization of land for the best public benefit under efficient and economic production plans, provide the means for the agregados and slum dwellers to acquire parcels of land on which to build their homes and to take all action leading to the most scientific economic and efficient enjoyment of land by the people of Puerto Rico."

The principal function of the Land Authority is the immediate rescue and distribution of lands under the actual control of artificial persons. Law No. 26 ratified the provisions of Joint Resolution No 23 limiting corporate holdings to 500 acres and made these provisions extensive to all and every artificial person, including civil partnerships and other legal entities. The law, however, is not applicable to natural persons whose holdings are, therefore, unrestricted.

For the purpose of carrying out the rescue of land by the Authority provision is made in the law of three ways of making it effective: (1)

through exercise of the power of expropriation against artificial persons, which, by possessing more than 500 acres, are violating the Act, (2) through purchase of land at sales held by trustees appointed by the courts in quo warranto proceedings, or any other proceedings at law for the violation of the Act or any other similar statute making like provisions; and (3) through direct negotiation with sued corporations that decide to go into dealings with the Authority before final judgment is given thereof by the courts.

The second part of the program of the Land Authority is aimed at providing the means for the agregados (landless farm workers) and slum dwellers to purchase parcels of land on which to construct their homes. In fulfillment of this provision of the law the Land Authority may acquire any real property or estate, in any part of the Island, in which it is imperative to establish rural communities. By 1942 such acquisitions had been initiated in the municipalities of Salinas, Juana Diaz, Coamo, Las Marias, Cayey, Aibonito, Loiza, Dorado, San Sebastian and Barranquitas.

Upon the acquisition of any extension of land the Authority is given power to create two types of farms: individual holdings and proportional-profit farms. The individual holdings may have an area of not less than 10 acres or more than 100, at the discretion of the Authority. In 1942, the Authority established a maximum size of 50 cuerdas. It is probable that holdings will fluctuate between fifteen and twenty cuerdas due to scarcity of land limiting the possibilities of creating large extensions. Payments for these lands is being spread over a period of 40 years at a moderate rate of interest (5 per cent).

The Authority does not pretend to solve the agrarian problem of the Island through the sole creation of additional individual holdings.

Benefits accruing from such operations could never reach a considerable number of individuals. The Authority, therefore, is empowered to create another type of farm in which benefits can be more amply distributed, the proportional-profit farms. These farms are to be from 100 to 500 acres in size and are to be managed by experienced lessees who shall have complete liberty of action in operating the farms as individual enterprises. Provision has been made for parceling out the land into lots^{of} from one to three acres to each one of the families of the laborers residing on the farm and for the distribution of the profits accruing among the lessees, who shall receive from five to fifteen per cent of the net profits, and among the laborers, who participate in proportion to the number of hours worked and wages received.

5. The Puerto Rico Reconstruction Administration.

The program of the P.R.R.A. bears a definite relation to the problem of land tenure. The most important phases of such program directly linked with land ownership are the demonstration projects in actual operation which have served to search into the possibilities for meeting the land problem through government financed cooperative and quasi-public control and ownership of land. Among these projects are those designed toward decentralization of land-holding, in the sugar cane, tobacco, coffee and citrus areas through Federal loans to land cooperative and Federal resettlement projects on a reimbursable basis for landless farm laborers and insolvent small farmers; those encouraging private capital investment in less than 500 acre holdings implemented by Federal loan to a mill cooperative; and finally, those having to do with the resettlement of needy farmers on "parceleros" situated in Federal and Insular forestry lands.

The P.R.R.A. has not only been active in its effort toward decentralization of land ownership by supplying more than 7,000 farm families with small subsistence plots, but has also provided such families with the means essential to a maximum utilization of the land. Definite conclusions as to the success of the demonstration projects cannot be reached, however, due to the relatively short time they have been in operation.

D. Commercial Agriculture.

1. Importance.

Puerto Rican agriculture places most emphasis upon the production of high money-value crops such as sugar, tobacco, fruits, and coffee, to which may be added cotton, coconuts, and other minor products. In the development of its agricultural setup the Island has followed those lines of economic specialization dictated not only by natural advantages, but also by artificial stimulations resulting from protected markets. It has concentrated its main productive energies in those tropical or subtropical products for whose production it is well-fitted and for which a ready market exists abroad. The tariff, however, has tended to give that production an artificial monetary advantage somewhat out of line with the natural advantages and degree of technical superiority which the Island enjoys for the production of such crops as contrasted with Cuba and other Caribbean areas supplying the American market.

Despite the factor of artificiality embodied in Puerto Rican agriculture, commercial advantage lies in the direction of producing these staple export crops, and not, as has been frequently figured, in the production of food crops. Given adequate market operations at good prices, it pays the Island to concentrate in the production of high-value-per-acre

crops and to get most of her foodstuffs from other markets in exchange for such crops. At the actual level of prices and, indeed, at the levels that have prevailed almost at all times, these crops will yield on reasonably well-suited land a money product much more substantial than that which could be obtained from any food crops that could be produced. It would be, therefore, unprofitable to devote to food production land used in the production of export crops unless such shifting comes about normally as a result of changed market conditions which no longer make it profitable to continue such practices. The amount of foodstuffs that can be acquired with the returns obtained from the most important export staples seems to be so much greater than the amount of food that can be raised on the same lands, that, if adequate market bargainings at remunerative prices can be made, it would be folly to divert to food production any lands well-fitted to the production of commercial crops.

2. Contributing Factors in the Development of Commercial Agriculture.

The following factors have been most instrumental in the promotion of commercial agriculture in Puerto Rico: (1) the existence of protected markets in the continental United States (1); (2) the development of large-scale organizations which have brought adequate capital and excellent management from the outside (2); (3) the better effective use of the land and the development of highly efficient methods of production (3); (4) the

(1) For further discussion refer to Section B-1, Chapter IX.

(2) For further discussion refer to Section B-4, Chapter IX.

(3) This point is taken up in Chapters IV, V and VI, where a discussion of improvement in methods of production and in land use in the sugar, coffee, and tobacco industry is made.

development of efficient means of transportation and communication; (5) the more ample sources of credit at reasonable interest rates (4); (6) cheap labor cost (5); and (7) the possibility of some additional irrigation developments.

3. Possibilities of Expansion.

Commercial agriculture in Puerto Rico does not warrant much further possibilities of expansion. The actual distribution of staple crops along well-defined lines determined by natural conditions will continue to exist except for those small changes which warrant shifting on marginal or sub-marginal lands in reaction to changed market conditions and similar influences. Possibilities of expansion in area are, however, virtually nil. In its process of adjustment along lines of highest profitableness, the industry has brought under cultivation practically all of the land suitable for the production of sugar, coffee, tobacco and fruits. Actually the sugar area has reached close to the limit fixed by the natural conditions of the Island. The same is almost true of the other staple commercial products.

The demand situation for commercial crops points in the same direction. Of the four major crops, two have fallen from a position of prominence to the point where they are of minor importance. Coffee, which as recently as 1926, had brought an annual income of \$7,000,000, largely from exterior sales, is practically in bankruptcy. The hurricane of 1928 and the loss of European markets in which the bulk of the crop formerly was sold has virtually put the Island out of the coffee business. Grapefruit, which once brought an income of over 3 million dollars, year before last

(4) For further discussion refer to Section F of this chapter.

(5) For further discussion see Section D-c in Chapter VIII.

added only \$177,000 to insular income, the American market having almost totally been lost as a result of depressed prices resulting from greatly increased production in Florida and Texas. A third crop, fresh pineapples, has felt the impact of the recent Reciprocal Agreement with Cuba, under which the duty on pineapples was reduced to half. This has discouraged further growth in pineapple production and has highly depressed the price received for their fruit by Puerto Rican growers.

Tobacco, has also experienced a drastic decline. Overmounting stocks and low prices caused by excessive acreage and production, and by a decrease in demand, have brought the industry to a real state of depression. The sharp decline in cigar consumption in the United States mainland where the crop is marketed has been chiefly responsible for the drastic drop in sales. The peak income of \$24,900,000 in 1927 dropped to \$5,000,000 in 1939.

Since 1934 sugar production has been subject to quota restrictions, a fact which brought about considerable decline both in employment and income. Sugar, however, is probably the only important agricultural product which can contribute to improved insular welfare. What further expansion to expect in this crop is, however, difficult to determine due to uncertainty of markets brought about by present war conditions.

4. Other Possibilities.

Much activity has recently developed in the Island in an effort to find new export crops to supplement those long established in the Island's economy. Some of them like Sea-Island cotton, vanilla, and citrons hold out some promise of usefulness. None of these minor crops, however, afford promise of converting themselves in an important part of the economy of the Island. A report of the U.S. Department of Agriculture upon considering

added only \$17,000 to domestic income. The domestic market being almost
totally closed as a result of Japanese prices resulting from greatly
increased production in America and Japan. A third crop, from pineapples,
has felt the impact of the recent Japanese agreement with Cuba, under
which the duty on pineapples was reduced to half. This has discouraged
further growth in pineapple production and has highly depressed the price
received for their fruit by Puerto Rican growers.

Robinson, has also experienced a drastic decline. Overmountain
straw and low prices caused by excessive supply and production, and by
a decrease in demand, have brought the industry to a real state of depres-
sion. The sharp decline in other commodities in the United States mar-
ket where the drop is estimated to have reached 50% for the
domestic crop in value. The peak income of \$22,000,000 in 1937 dropped
to \$5,000,000 in 1938.

Since 1934 sugar production has been subject to great restric-
tions, a fact which brought about considerable loss in employment
and income. Sugar, however, is probably the only important agricultural
product which has succeeded in improved market value. When further
expansion to export in this crop is, however, difficult to determine due
to uncertainty of market through which to export was controlled.

4. Fruit Exports

Such activity has recently developed in the island in an effort
to find new export crops to supplement those long established in the island's
economy. Some of these are banana, citrus, vanilla, and other fruits
and some produce of vegetable. Some of these other crops, however, which
promise of converting themselves in an important part of the economy of the
island. A report of the U.S. Department of Agriculture upon establishing

this feasibility, reads:

"It must be recognized that whatever ultimate future development may be, there has not appeared in the horizon any new agricultural product which bids fair to make a major contribution to the cash income of the Island sufficient to make up, in any considerable extent, for the losses due to the virtual disappearance of coffee as an important export crop and the serious decreases in returns from tobacco and tropical fruits." (1)

E. Subsistence Agriculture.

1. Importance.

According to the 1935 Census, 180,801 acres of land were required to produce such subsistence crops as corn, rice, beans, potatoes, yautias, yuccas, yams and others that year. Though these crops occupied about one-fourth of the cropland harvested in 1935, they provided relatively low returns in relation to the area needed for their growth. The total value of these crops in that year was \$2,937,500, or about an average value of \$16.25 per acre. On 334 small farms investigated by the Division of Agricultural Economics of the University of Puerto Rico, intensive cash crops occupied 29 per cent of the land in crops, and yielded 64 per cent of the agricultural income, while subsistence crops, which occupied 71 per cent of the land in crops, produced only 36 per cent of the agricultural income.

Food crops are of considerable importance in Puerto Rico since they constitute the basis of the rural population's food. It is, therefore, natural to expect from those hoping to raise the standard of living in the country that they should look longingly upon any idle lands as a feasible resource for the promotion of subsistence farming which could add substantially to the consumption needs of the rural people. Unfortunately, the

(1) Report of the U.S. Department of Agriculture, 1939, Page 184.

stimulation of staple export crops, particularly sugar, tobacco and fruits, has not been paralleled by similar growth of crops for insular consumption. To some degree, indeed, the production of food crops has suffered because of their inability to compete in land appropriation with cash crops of high yielding value.

2. Economic Possibilities.

The opinion given by Zimmermann in a recent report to the inter-departmental committee on Puerto Rico throws light on the possibilities enjoyed by subsistence farming in the Island:

"Subsistence farming by itself can not solve the Puerto Rican problem. There are in Puerto Rico approximately 340,000 families. . . If the figure of ten acres per family is accepted as a minimum of average land required to support a family by subsistence farming, the total acreage required to support the population of Puerto Rico in that manner would be 3,400,000 acres, or about one-half again as much land as the entire land area of Puerto Rico, or from three to four times the area which at present is considered cultivable. Even if it were assumed that five acres were sufficient to support a family, there would not be enough land to go around. Where, however, subsistence farming is practiced as a supplement to wage-earning or other commercial income, the amount of land required for such supplementary farming would naturally be correspondingly less.

"Moreover, cultivability under subsistence practice would unquestionably be greatly reduced from the current level which is possible only because of the capital investment and science applied under commercial farming." (1)

The Island has little hope of improving its economic status by growing food crops. It seems that the only means by which the country's limited resources can be made to provide a living for the people is by utilizing them in crops yielding, not large amounts of food value per acre, but high monetary returns. Various studies relative to the prevailing

(1) Zimmermann, Erich W., "Staff Report to the Interdepartmental Committee on Puerto Rico," Washington, 1940, Page 84.

food situation in the Island have reached the conclusion that the farm resources devoted to general subsistence crops would not provide a subsistence diet for the people, to say nothing of other needs. A study of this nature made in 1927 by Dr. Cook, of the School of Tropical Medicine, revealed that if the total cropland in the country be devoted entirely and exclusively to the production of subsistence crops, this would provide a diet of 1800 calories per capita for only 340,000 people. (1) Such facts, however, do not imply that every effort should not be made to encourage the small farmer in the utilization of available land for the production of subsistence crops. When a country's rural population is dense and depends extremely for its diet needs on the food crops that can be obtained from the land, something must be done about it, else large groups of people will be condemned to a subsistence level or worse.

F. Federal Agencies in Agriculture.

The greatest benefits accruing to Puerto Rican agriculture during the last eight years or so are due to the facilities making available long-term and short-term credit at a more reasonable rate of interest. This credit has been provided by such agencies as the Federal Land Bank of Baltimore, the Federal Intermediate Credit Bank of Baltimore, the Baltimore Bank for Cooperatives, the Production Credit Corporation, the Puerto Rico Production Credit Association, the Emergency Crop Loan Office, and the Puerto Rico Hurricane Relief Loan Section. Other agencies which have had a notable influence in Puerto Rican agriculture and to which reference has already been made in a previous section of this chapter, have been

(1) Smith, Dudley, "Income Problems of Puerto Rico", Association of Sugar Producers of Puerto Rico, Washington, October 1939, Page 61.

the Agricultural Adjustment Administration (1) and the Puerto Rico Reconstruction Administration (2).

1. The Federal Land Bank of Baltimore.

The various programs adopted by the Federal Land Bank of Baltimore for the benefit of agriculturists have brought about satisfactory results in Puerto Rico during the past years. In 1940-41 it granted 180 new loans amounting to \$680,800 against only 75 loans granted the previous year. The former consisted of 38 Regular Land Bank loans aggregating \$408,600, and 70 Land Bank Commissioner loans totaling \$272,200. The regular Land Bank loans were made at the interest rate of 4 per cent, and those of the Land Commissioner at $3\frac{1}{2}$ per cent. The bank also sold to farmers, during the fiscal year 1940-41, 137 of the farms which had been acquired by it, and through such sales, and as a means of facilitating payment of the purchase prices, granted long-term loans in the amount of \$365,517.67 during the year.

The following figures show the distribution of the Federal Land Bank loans from fiscal year 1937-38 to fiscal year 1940-41: (3)

	<u>1937-38</u>	<u>1938-39</u>	<u>1939-40</u>	<u>1940-41</u>
Regular Land Bank Loans	\$212,900	\$141,700	\$100,600	\$408,600
Land Bank Commissioner Loans	289,400	217,800	179,100	272,200

2. Federal Intermediate Credit Bank of Baltimore.

The Federal Intermediate Credit Bank of Baltimore, through its Puerto Rico office, has also been most helpful to farmers and farmers'

(1) See Sections which refer to the A.A.A. program in Chapters IV and VI.

(2) See Pages 63-66

(3) Annual Reports of the Governor of Puerto Rico, 1938, 1939, 1940 and 1941.

credit associations in the Island. During the fiscal year 1940-41 discounts of agricultural paper were made involving \$6,096,328.98, of which \$3,874,203.57 were loans discounted for the Puerto Rico Production Credit Association, \$629,268.09 farmers' obligations discounted for the Credito y Ahorro Ponceno, \$682,700 farmers' obligations discounted for the Banco de Ponce, and \$910,157.32 obligations of farmers' cooperative marketing associations discounted for the Baltimore Bank for Cooperatives.

The following comparative figures show the amount of loans granted by this agency from 1937-38 to 1939-40: (1)

	<u>1937-38</u>	<u>1938-39</u>	<u>1939-40</u>
P.R. Production Association	\$1,712,146.87	\$1,625,093.13	\$2,192,646.97
Credito y Ahorro Ponceno	608,976.43	474,172.41	421,553.97
Banco de Ponce	475,000.00	509,000.00	631,400.00
Baltimore Bank for Cooperatives	529,474.01	570,424.59	873,721.78
Total.....	<u>\$3,325,597.31</u>	<u>\$3,178,690.13</u>	<u>\$4,119,322.72</u>

3. Baltimore Bank for Cooperatives.

The Baltimore Bank for Cooperatives is probably the least known farm credit agency now operating in Puerto Rico. Its usefulness, however, has been amply demonstrated through the loans it has made to the coffee marketing, fruit and tobacco growers' cooperatives. The following comparative figures show its importance in this last sense: (2)

	<u>1937-38</u>	<u>1938-39</u>	<u>1939-40</u>
Cafeteros de Puerto Rico	\$240,513.45	\$340,128.36	\$587,192.54
P.R. Tobacco Marketing Assoc.	308,960.56	230,296.23	305,129.24
P.R. Fruit Growers' Cooperative	51,000.00	-----	18,440.40
P.R. Marketing Association for Minor Crops	39,575.00	41,400.00	-----
Total.....	<u>\$640,049.01</u>	<u>\$611,824.59</u>	<u>\$910,762.18</u>

(1) Annual Reports of the Governor of Puerto Rico, 1937-38, 1938-39 and 1939-40.

(2) Ibid.

In the fiscal year 1940-41 loans aggregating \$554,471.94 and \$355,685.38 were granted to the Cafeteros de Puerto Rico and the Puerto Rico Tobacco Marketing Association respectively.

4. Production Credit Association.

During the fiscal year 1935-36 all the protective credit associations of the Island were consolidated into a single central organization now known as the Puerto Rico Production Credit Association, which makes loans to farmers engaged in growing sugar cane, tobacco, fruits and coffee, and in the raising of live stock. The following crop loans have been made by this agency: (1)

<u>Fiscal Year</u>	<u>Number of Loans</u>	<u>Amount</u>
1937-38	---	\$1,066,545.83
1938-39	257	1,469,955.16
1939-40	325	2,033,175.52
1940-41	283	3,171,822.59

5. Emergency Crop Loan Office.

The Emergency Crop Loan Office, a unit of the Farm Credit Administration, has operated in Puerto Rico since the early part of 1935, making crop production loans chiefly on coffee, sugar cane, and tobacco. Its purpose is to make funds for crop production available to the small farmers of Puerto Rico who are unable to obtain loans from other sources at reasonable interest.

During the fiscal years 1938-39 to 1940-41, loans were made by the Emergency Crop Loan Office as follows: (2)

	<u>1938-39</u>	<u>1939-40</u>	<u>1940-41</u>
Coffee	\$269,735	\$218,735	\$292,075
Sugar Cane	137,790	177,690	530,405
Tobacco	197,610	146,820	138,660
Miscellaneous	5,710	6,115	17,460

(1) Annual Reports of the Governor of Puerto Rico, 1939, 1940, 1941

(2) Ibid.

6. Puerto Rico Relief Loan Section.

The Hurricane Relief Commission was abolished by Congress and superseded by the Hurricane Relief Loan Section of the Department of the Interior. This agency grants loans for the rehabilitation of farms which have suffered from the effects of destructive hurricanes. A total of 3,033 loans amounting to \$5,673,049 was granted in 1929 by this agency for the mentioned purpose. Pretty soon it was evident that it would be almost impossible for the growers to whom these loans were granted to repay the full amount and that an attempt to force collection in its entirety would adversely affect the Island's economic structure. To remedy this situation a system was created making provision for adjustment of the loans on the basis of the ability of each farmer to pay. The operations of this system had, up to 1940-41, resulted in the collection of an average of less than 30 per cent of the principal of the original loan. Of the total number of loans granted, thirty-six had been fully repaid by 1940-41, and four hundred forty-four adjusted, resulting in a recovery of \$388,585.30 in whole or partial settlement of loans amounting to \$1,503,107.

CHAPTER IV

SUGARA. Development and Actual Importance
of the Sugar Industry in Puerto Rico.1. Sugar Production from the 16th Century to Present Times.

Sugar production in the island of Puerto Rico dates since 1515 when it was introduced from the Dominican Republic. It was one of the first cultivated crops to be grown there by the white men. The Island's sugar industry, as it stands to-day, is thus the result of more than 400 years of practical experience and effort toward betterment. Although built independently of other sugar producing areas with which it competes in producing and marketing sugar, the industry has progressed along almost exactly the same lines. Though economic and social conditions have not remained static throughout the years, most of the factors which have intervened in modeling its present structure have stayed fundamentally static.

Sugar output at the end of the sixteenth century was approximately 190 tons (see Table XVII). Shortly after the middle of the century production reached 250 tons a year, but by 1602 it had dropped to only 38 tons. The industry virtually disappeared as a consequence of storm damage in 1615, and the output did not increase considerably during the 17th and the first half of the 18th century, due principally to absence of shipping facilities and to trade restrictions in Spanish markets. In 1776 the output still remained at the low figure of only 137 tons annually. Changed marketing conditions in 1800 gave the industry such impetus that production rose steadily from 9,391 tons in 1828 to over 100,000 tons by 1880. Following

Table XVII

Production of Sugar in Puerto Rico for 377 years
(Short tons - "as made" basis)

Year	Quantity	Year	Quantity	Year	Quantity
1564	250	1861	65,517	1901	103,152
1582	188	1862	64,401	1902	100,576
1602	38	1863	58,122	1903	139,096
1776	137	1864	46,255	1904	151,088
1783	137	1865	60,526	1905	214,480
(1)	(1)	1866	55,679	1906	206,864
(1)	(1)	1867	60,125	1907	230,095
1828	9,391	1868	61,707	1908	277,093
1829	13,857	1869	72,475	1909	346,786
1830	17,008	1870	95,824	1910	349,840
1831	15,389	1871	103,303	1911	371,070
1832	17,326	1872	89,059	1912	398,004
1833	17,139	1873	95,260	1913	351,666
1834	17,940	1874	77,995	1914	346,490
1835	21,928	1875	81,096	1915	345,490
1836	24,944	1876	72,829	1916	483,589
1837	22,827	1877	61,578	1917	503,081
1838	34,569	1878	83,416	1918	453,793
1839	34,622	1879	170,679	1919	406,002
1840	40,896	1880	110,847	1920	485,077
1841	42,278	1881	63,236	1921	491,000
1842	45,953	1882	92,115	1922	405,000
1843	35,519	1883	87,895	1923	379,000
1844	40,580	1884	109,098	1924	447,000
1845	46,452	1885	98,059	1925	660,003
1846	43,870	1886	70,295	1926	603,187
1847	52,089	1887 ^m	89,057	1927	629,133
1848	50,649	1888	68,328	1928	748,677
1849	50,371	1889	70,117	1929	586,760
1850	56,064	1890	64,144	1930	866,109
1851	59,208	1891	53,014	1931	783,163
1852	46,815	1892	74,187	1932	922,335
1853	55,302	1893	47,495	1933	816,337
1854	53,935	1894	53,361	1934	1,103,822
1855	50,718	1895	66,073	1935	773,021
1856	58,468	1896	61,473	1936	926,344
1857	43,195	1897	63,546	1937	996,303
1858	61,771	1898	60,285	1938	1,077,149
1859	44,222	1899	39,200	1939	851,969
1860	58,008	1900	81,526	1940	1,018,803

(1) Figures not available.

Source: Data for 1564, 1582, 1602, 1776, and 1783 taken from "Origin and Development of the Sugar Industry in Puerto Rico," (unpublished manuscript) by Francisco Lopez Dominguez; data for 1828 through 1940, from Forty First Annual Report of the Governor of Puerto Rico.

this latter date, the output substantially dropped due to declining prices and lack of capital to maintain the industry on the same level as that sustained in other sugar producing areas. At the close of the century, a combination of heavy hurricane damage and unfavorable market and economic conditions reduced production to 39,200 tons, the lowest level on record since 1844.

In 1901, the Island was included within the tariff walls of continental United States. This made sugar production a more profitable activity than it had been before, and served as the basis for the attraction of capital investment in the construction of modern mills. These modern mills required a supply of cane from a much more extensive area than the primitive mills, and this brought about diverse difficulties in production and transportation. As a result, together with the erection of modern mills went the consolidation of the large coastal pasture and sugar estates. This concentration into larger, more efficient units, also made accessible mill facilities to small cane-producers who were previously unable to produce and sell cane. Such a development was feasible because of improvements in means of transportation. Formerly only a reduced number of growers within hauling distance of a mill were able to process their sugar cane. The modern mill provided a market for all farmers within ox-cart distance of the sugar railroad, and in later years with improved transportation facilities, to almost every grower in the Island. In 1898, each mill in Puerto Rico ground the cane of only seven farmers; in 1939, the cane of an average of 277 farmers was ground.

For a number of years prior to American occupation, the output of sugar in the Island averaged about 60,000 tons yearly, most of which was marketed in continental United States. The inclusion of the Island

within the American protective structure in 1901 made sugar production more profitable and a new era ensued in the Island's sugar industry. The industry underwent a gradual expansion both in acreage and output. Sugar output expanded from 60,285 short tons produced in 1898 to 503,081 tons in 1917 (see Table XVII); acreage increased from approximately 72,000 under sugar cane in 1899 to over 200,000 acres by 1917. Expansion during the early part of the twentieth century was more intensive and rapid than during the latter part due mainly to new areas being opened up to production by the plantation railroads built mostly during this time.

Between 1917 and 1919 sugar production decreased from 453,793 to 403,002 short tons, and the amount produced per acre dropped about 1,500 pounds. This was due to sugar cane disease known as "mosaic," which began attacking the plant in 1915 and reached serious proportions in 1918 and immediate years. Replacement in variety brought an increase in production of approximately 85,000 tons between 1919 and 1921, or a rise of more than 600 pounds per acre in the yield of sugar.

By 1920, however, sugar was struck by a new disease named ^{it} "gomosis" which ^{it} is estimated, reduced both cane tonnage and sugar content. This accounts for reduction in output from about 491,000 tons in 1921 to 379,000 tons in 1923. Total yield of sugar per acre thus was reduced by more than 35 per cent between 1917 and 1923 as a result of the combined effect of "mosaic" and "gomosis". This reduction in yields, along with the decline in price, which occurred between 1920 and 1923, caused a 20,000 acre decline in sugar cane acreage between 1918 and 1924, while the cane acreage in other sugar cane producing areas continued to go up.

Due to improved and disease-resistant cane varieties, and increased fertilization and irrigation, production increased considerably

between 1925 and 1934, and reached a peak movement in this last year, when 1,103,822 tons were produced. Since 1934 sugar production was smaller due to the restrictions of the Agricultural Adjustment Administration. Despite these limitations, sugar output between 1934 and 1940 remained close to the million dollars mark. Data compiled by the U.S. Department of Agriculture show that the output in both 1935 and 1939 would have exceeded the 1934 level had growers not been required to leave part of their cane uncut.

2. Volume and Value of Sugar Exports.

Statistical data for sugar shipments from Puerto Rico prior to American occupation are difficult to obtain. According to Carroll, (1) sugar exports in 1894 amounted to 46,621,139 kilos, or 102,566,506 pounds. By 1899 sugar exportation from the Island had risen to 57,648,851 kilos, or 126,827,472 pounds (63,413 tons), sold at a value of \$4,007,999. Most of this sugar was sold in continental United States markets though they did not constitute at the time the principal outlet for the sugar product of the Island.

After the inclusion of Puerto Rico within the United States tariff structure in July 1901, the value and volume of shipments to the Mainland increased steadily, reaching a peak movement in the fiscal year 1936-37, when 959,510 tons of raw and refined sugar were exported at a value of \$71,390,088 (see Table XVIII). Sugar exports for the four ^{since} decades / 1900 averaged respectively 171,198 tons from 1901-1910; 370,986 tons from 1911-20; 513,119 tons from 1921-30; and 846,502 tons between 1931 and 1940. This increase in shipments was accompanied also by a rise in value of sugar exported. The average value of exportation for the

(1) Carroll, H.K., "Report on the Island of Puerto Rico," U.S. Government Printing Office, 1899.

first decade was \$12,831,687; for the second decade, \$41,840,510; for the 1921-30 decade, \$50,702,245; and \$55,569,623 for the last decade.

Average value per exported pound of sugar increased from a low level of 3.53 cents in the quinquennium 1901-05 to a high level of 7.13 cents per pound for the period 1916-1920. The peak movement was reached in 1920 when the average value per exported pound was 11.79 cents. The lowest level ever reached in value after 1913 was in the depression year 1932, when the average value was 3.02 cents per exported pound. Production restrictions under the A.A.A. program were responsible for the improvement in prices after 1933. A new high average value level was reached in 1936-37 when sugar exported brought in 3.72 cents per pound. Prices declined somewhat after 1937, but with the break of the war began to rise steadily.

The following comparative figures show how Puerto Rico's share of the sugar market of the United States contrasted with other sugar exporting areas, for the period 1934-1938: (1)

<u>Domestic:</u>	
Continental beet sugar states	21.7%
Continental cane sugar states	6.2
Puerto Rico	13.2
Hawaii	14.3
Virgin Islands	0.1
<u>Foreign:</u>	
Cuba	29.2
All other	0.4
Philippine Islands	<u>14.9</u>
Total	<u>100.0%</u>

All domestically produced sugar moves freely within the area

(1) Zimmermann, Erich W., "Report to the Interdepartmental Committee on Puerto Rico," Washington, 1940, Page 141.

Table XVIII

Sugar Exportation in Puerto Rico,
1900 - 1940.

Fiscal	Exportation :raw and refined: :(tons of 2,000 : pounds)	Value of : exportation : (dollars)	Average : value per : exported ton : (dollars)	Average : value per : exported pound : (cents)
1900-01	168,909	\$4,715,611	\$68.432	3.42 cents
1901-02	91,912	5,890,302	64.086	3.20
1902-03	113,108	7,470,122	66.044	3.30
1903-04	129,647	8,690,814	67.034	3.35
1904-05	135,663	11,925,804	87.907	4.39
1905-06	205,277	14,184,667	69.100	3.45
1906-07	204,079	14,770,682	72.377	3.61
1907-08	234,607	18,690,504	79.667	3.98
1908-09	244,257	18,432,446	75.463	3.77
1909-10	284,522	23,545,922	82.756	4.13
1910-11	322,919	24,479,346	75.806	3.79
1911-12	367,145	31,544,063	85.917	4.29
1912-13	382,700	26,619,158	69.556	3.47
1913-14	320,633	20,240,333	63.126	3.15
1914-15	294,475	27,278,754	92.635	4.63
1915-16	424,955	45,809,445	107.798	5.38
1916-17	488,943	54,015,903	110.474	5.52
1917-18	336,788	41,362,229	122.813	6.14
1918-19	351,910	48,132,419	136.774	6.83
1919-20	419,388	98,923,750	235.876	11.79
1920-21	409,407	72,440,924	176.941	8.84
1921-22	469,889	40,820,333	86.872	4.34
1922-23	355,423	46,207,276	130.006	6.50
1923-24	372,041	47,838,687	128.584	6.42
1924-25	571,559	53,261,895	93.187	4.65
1925-26	578,811	48,223,258	83.314	4.16
1926-27	574,869	54,756,984	95.251	4.76
1927-28	605,539	54,579,020	90.133	4.50
1928-29	472,432	35,224,038	74.558	3.72
1929-30	721,217	53,670,038	74.415	3.72
1930-31	806,826	54,366,952	67.383	3.36
1931-32	912,419	55,118,211	60.408	3.02
1932-33	822,925	50,780,587	61.707	3.08
1933-34	828,115	54,822,555	66.201	3.31
1934-35	755,445	47,837,114	63.323	3.16
1935-36	832,723	60,302,741	72.416	3.62
1936-37	959,510	71,390,088	74.402	3.72
1937-38	735,541	50,144,811	68.174	3.40
1938-39	942,946	53,604,381	56.847	2.84
1939-40	868,568	57,328,790	66.003	3.30

Source: P.R. Department of Agriculture and Commerce, "Annual Book on Statistics," fiscal year 1939-40.

protected by the United States tariff. Sugar produced in the Island, therefore, along with that produced by other domestic areas, is admitted free of duty into continental United States. Cuban sugar, at present, is subject to a duty of 0.75 cents per pound (raw, 96° centrifugal), while sugar from other foreign countries pays 1.875 cents per pound.

3. Farms in Sugar Cane.

Although the total number of farms in Puerto Rico has revealed no substantial change during the past 40 years, the number of farms growing sugar cane increased considerably from 1899 to 1939. About 9,000 more farms grew cane in 1939 than in 1899. Sugar cane was harvested from 11,381 farms in 1939, according to records of the U.S. Department of Agriculture, while only 2,336 farms reported sugar cane production in 1899, according to the Puerto Rican census of this year. As the sugar industry in the Island changed from one of old, obsolete equipment and poor output practices to an efficiently and expertly managed industry, the number of sugar cane farms increased nearly five-fold as contrasted to the 1899 level.

The extension of mill facilities to small growers who were previously unable to produce and market cane, made possible by the transportation system developed by the mills, had an influence on the increase of farms after the beginning of the twentieth century. The number of farms growing sugar cane increased from 2,336 in 1899 up to 6,200 in 1909, and then to 7,620 in 1919. Census data show a drop in the number of farms in cane between 1919 and 1929. From 1929 to 1939 the number of farms again rose, increasing 60 per cent.

For about 10 years, between 1917 and 1926, the sugar industry in the Island was ravaged by "mosaic" and "gomosis". As a result the number

Table XIX

Number, Acreage, and Production of Farms
Growing Sugar Cane, 1899 to 1939.

Year	: Number of		: Acreage of Sugar Cane		: Production of Sugar	
	: farms growing:		: Average		: Average	
	: sugar cane :		: per farm :		: per farm	
	:		:		:	
		Total	per farm	Total	per farm	
		Acres	Acres	Tons	Tons	
1899	: 2,336	: 72,146	: 30.9	: 39,200	: 16.8	
1909	: 6,200	: 185,927	: 30.0	: 346,786	: 55.9	
1919	: 7,620	: 238,901	: 31.4	: 406,133	: 53.3	
1929	: 7,103	: 251,018	: 35.3	: 586,578	: 82.6	
1935	: 7,693	: 299,384	: 38.9	: 1,148,208	: 149.3	
1937	: 7,950	: 300,951	: 37.9	: 996,346	: 125.3	
1938	: 9,201	: 300,567	: 32.7	: 1,077,128	: 117.1	
1939	: 11,381	: 303,055	: 26.6	: 1,216,939	: 106.9	

Source: Smith D. and Requa, W.M., "Puerto Rico, Sugar Facts," Association of Sugar Producers of Puerto Rico, 1939.

of farms growing cane dropped substantially, and production was abandoned on many farms. Resistant varieties came into general use around 1928, after a period of development and testing that started in 1909, following which the number of farms growing cane began to increase. There were 7,103 farms growing sugar cane in 1929, only 517 farms less than in 1919 (see Table XIX).

The number of farms growing cane rose only 8 per cent between 1929 and 1935, but approximately 50 per cent between 1935 and 1939. Statistics compiled by the Agricultural Adjustment Administration show 7,693 farms in cane in 1935--590 farms more than reported cane in 1929. They also show that the number of sugar cane farms increased to nearly 7,950 in 1937 as a result of quotas reduced to old farmers. In 1938, proportionate shares under which cane was delivered to the sugar mills were allotted to nearly 9,201 farms, and in 1939 to 11,381 farms.

4. Gainful Workers, Payrolls, and Wages.

The sugar industry in Puerto Rico provides the main source of income, directly or indirectly, for more than 50 per cent of the Island's gainfully occupied workers. In 1935, when production was reduced 350,000 tons, 94,718 persons reported gainful occupations on sugar cane farms. These, along with 16,162 persons gainfully employed in sugar mills and nearly 3,000 more employed by the sugar mills in transportation, make a total of approximately 114,000 people engaged in sugar production in Puerto Rico. This latter figure represented 22 per cent of the gainfully employed persons on the Island.

Besides sugar employees, many other individuals depend indirectly upon the sugar industry for their income, including people engaged in public transportation systems and public utilities; drivers; manufacturers; storekeepers, merchants, and salesmen; service and garage employees and the like; and employees of the Insular and Municipal governments. These comprise nearly 30 per cent of the individuals gainfully occupied, making, in all, 52 per cent of the people who depend wholly or partially upon sugar.

Sugar cane farms alone usually provide more work than any other activity on the Island. Nearly 120,000 individuals are usually engaged in sugar cane production upon about 300,000 acres of land. Sugar mills provide work for approximately 15,000 additional people. Thus, 100 acres of sugar cane give employment, on the average, to about 46 persons. Other agricultural enterprises have more than 550,000 acres in crops, and provide employment for only 31 persons for each 100 acres, including those engaged in rehandling and stripping tobacco, those packing and canning fruit, and those engaged in the coffee industry. Land in sugar cane, therefore, provides at least one-third more employment in proportion to acreage than that in all other crops.

The sugar industry, including independent growers, also pays the largest payrolls. During the last decade payrolls have averaged nearly 45 per cent of all wages paid in Puerto Rico. Of the total sugar industry payroll, around 88 per cent was paid to laborers in the fields and sugar factories, and about 12 per cent was paid for clerical services, legal services, and management wages. (1) The extent to which national welfare relies upon the sugar industry is seen by the drop of about \$6,000,000 in wages paid from 1933-34 to 1934-35 when sugar output decreased from a peak level of 1,113,697 to 780,741 short tons, as a result of restrictions under the A.A.A. program. (2)

Wages paid on farms growing sugar cane are considerably higher than those paid on other farms in the Island. In many instances they are several times as high as those paid for the same services in other agricultural services. Two reasons may be given to explain this: (1) the fact that labor is strongly organized in this field, and (2) the fact that sugar cane is the crop best suited to the natural resources of the Island, and thus yields a sufficiently high return to enable labor to derive a more substantial amount for their services than that obtained in other agricultural fields.

Sugar cane workers in the Island get higher wages than agricultural labor in any of the Southern States. A survey of 71 sugar cane plantations covering 14,246 workers, made in 1939 by the Insular Department of Labor, showed an average hourly wage rate of 15.6 cents. In the continental United States the average wage rate for agricultural labor during the

(1) P.R. Department of Agriculture and Commerce, "What Sugar Means to Puerto Rico," 1939, Page 5.

(2) Ibid, Page 5.

same period was 19.6 cents. Working and living conditions in the Island, as well as the type of work, are more like those of the Southern States than like those of the Northern States.

Wage rates on sugar cane farms rose approximately 35 per cent between 1933 and 1937, and another 10 per cent to 1938. From 1932 to 1937 they were closely related to the price of sugar. Despite the sharp reduction in sugar output between 1935 and 1938, and the fact that sugar prices during the first half of 1938 neared those existing prior to federal restrictions, wage rates on sugar cane farms during 1939 were about 50 per cent higher than in 1933. In 1938 and 1939, when wage rates showed a 10 per cent increase over the 1937 level, a substantial discrepancy from sugar prices prevailed. Moreover, the number of laborers employed by the sugar industry was not reduced along with the output, though the number of days of work per worker was reduced somewhat. Weekly or annual incomes of individual laborers have not risen as rapidly as wage rates, because of this share-the-work-policy.

5. Sugar Wealth in Relation to Total Wealth.

Of the total value of all agricultural land in Puerto Rico, farms growing sugar cane represent somewhat over 50 per cent. In 1935, out of a total value of \$156,278,000, sugar cane farms comprised \$87,547,000. Among the various types of agricultural enterprises, land in cane is the highest valued. In 1935, the average value of land in farms principally dependent upon sugar for income was \$115.50. The average value per acre of land in all other farms was \$59.55.

6. Sugar as a Source of Taxation.

It has been estimated that in recent times, receipts by the Insular government, mostly in the form of taxes, have absorbed approximately

20 per cent of the total income of the Island. The sugar industry, including farms, mills, and railroads, bears a tremendous social burden since it pays direct taxes that are responsible for nearly two-fifths of the regular revenue of both Insular and Municipal governments. As is logical to expect, Government revenues fluctuate parallel with conditions affecting the industry.

Table XX

Taxes Paid by the Sugar Industry,
1926-27 to 1937-38.

Fiscal Year	Taxes Paid by the Sugar Industry					
	Total Regular Revenue of Insular and Munici- pal Govern- ments 1/	:	Total Amount :	Ratio to Total Regular governmental revenues	:	Per Ton of Sugar Produced:
	:	:	:	:	:	:
	Million Dollars	:	Million Dollars	Per Cent	:	Per Dollars per Ton Cent
1926-27	\$14.2	:	\$6.2	44%	:	\$9.79
1927-28	14.9	:	6.4	43	:	8.49
1928-29	13.4	:	5.1	38	:	8.71
1929-30	12.3	:	5.5	45	:	6.30
1930-31	16.3	:	5.2	32	:	6.60
1931-32	13.1	:	5.9	45	:	5.90
1932-33	15.2	:	6.3	42	:	7.58
1933-34	16.0	:	6.5	41	:	5.87
1934-35	17.9	:	5.7	32	:	7.28
1935-36	16.9	:	6.7	39	:	7.20
1936-37	20.0	:	7.0	35	:	7.07
1937-38	19.7	:	7.5	38	:	6.98
Average	15.8	:	6.2	39	:	7.31

1/Compiled from Annual Reports of the Governor of Puerto Rico, and excludes transfers, repayments, Federal aid, and other items not representing tax revenues.

2/Estimate based upon detailed revenue receipts by sources as shown in Annual Reports of Treasurer of Puerto Rico and by reports of the U.S. Customs House at San Juan, and upon additional data supplied by the Treasurer of Puerto Rico.

In 1929, for example, when production was short 275,000 tons due to hurricane damage, Government receipts from taxes on sugar were down \$1,300,000.

Between 1927 and 1938, taxes paid by the sugar industry averaged approximately \$7.30 per ton of sugar produced (see Table XX). Although the total levies paid by the industry increased during this period, output increased at a higher pace and resulted in a downward trend in the amount of tax per ton of sugar. Nevertheless, prices for sugar dropped by a greater proportion during this period than did the amount of tax per ton of sugar, so that taxes took an increasing share of the gross income.

In addition to the taxes paid by the sugar producers, individuals who depend directly or indirectly upon the industry for their income also pay Insular taxes through assessments on property, income, and inheritances, and numerous excise levies. It is estimated that about 20 per cent of all the regular Insular and Municipal receipts comes from this additional source. Sugar, therefore, provides directly and indirectly about \$60 of each \$100 of regular budgetary funds of local governments.

7. Factors that have Handicapped and Favored the Sugar Industry during this Century.

Among the many factors that have handicapped the development of the sugar industry in Puerto Rico are: (1) difficulties the industry has had to face because of cane diseases, drought, and the hurricanes of 1928 and 1932; (2) the market collapse which followed post-war prosperity; (3) readjustment to peace-time production after war-time dislocations; (4) the economic depression of 1930-33; (5) the trend toward overproduction resulting from the widespread introduction of "noble canes"; and (6) the sugar control laws, which, though beneficial, entailed hardships in the Island not met elsewhere to the same degree.

Factors that have favorably influenced the growth of the industry are : (1) the extension of the tariff and other laws of the Mainland to

Puerto Rico which provided the necessary inducement to attract Mainland and other capital to the sugar industry; (2) technical improvements and use of scientific methods; (3) improvement of varieties of sugar cane and perfection of cultural methods; (4) heavy American capital investments without which the industry would not have progressed because of lack of local capital resources; (5) improvement in the means of transportation and communication; (6) the sugar control laws; and (7) government cooperation through improvement of roads, installation of irrigation services, selection of competent personnel for the industry, etc.

B. Organization of the Sugar Industry.

1. General Structure.

The sugar industry of the Island comprises the cane fields with their complement of farm equipment, and the sugar mills with their collateral machine shops, warehouses, docks, and transportation equipment. To this may also be added the housing facilities for laborers, both on farms and at the mills.

Over 11,000 farms in 1939 were growing sugar cane for purposes of sugar extraction. These sugar cane lands follow the coastal plain almost entirely around the Island. Their size is not uniform, varying from those with a capacity to produce only a few hundred pounds of cane to those which can produce several thousands of tons. Methods of production in the different sections of the Island as well as in the different farms are not of a uniform pattern. On some farms all activities are executed by hand, while on others the most modern equipment is applied.

Except for one mill, all mills existing in the Island during the 1939 grinding season were under operation. There are 41 such mills in the

Island, thirty-one of which are near the coast, and ten in the interior. There is the greatest diversity in size among these mills. Central Guanica, in the southwest, has a rated daily grinding capacity of 8,000 tons of cane, while Central Pellejas has a rated daily capacity of 150 tons. Twenty-four of the forty-one mills are rated from 1,000 to 2,000 tons, twelve others at less, and five others at more. Actual sugar output in the peak year 1933-34 ranged from 152,000 tons at Guanica to 1,400 tons at Pellejas, with an average for all mills of approximately 28,000 tons.

These mills are of the most efficient design with enough capacity for processing the cane crop during the period of the year when the sugar content is the highest and when the greatest efficiency is obtained. If the cane is not processed during this time, the greatest sugar recovery is not obtained, and thus efficiency is lowered. Probably the larger mills have the highest technical efficiency, but many smaller ones, with a more compact area of cane supply and less extensive overhead expenses, appear to get along well. The larger mills incur heavy transportation costs, due to the fact that they obtain their cane from a more extensive area.

The mills in the Island are organized as family holdings, partnerships and trusts, corporations, or government financed cooperatives. Of the forty-one sugar mills existing in the Island, sixteen are operated as strictly family enterprises, usually in lineal succession from earlier family estates. Partnerships other than within families operate five of the mills, and companies in which a comparatively large number of people own stock operate 18 of the mills. The two remaining mills are operated as cooperatives, sponsored and financed by the Government. Of the 18 company mills, nine are owned and controlled by four American-owned companies,

and nine are operated as separate companies, owned and controlled by Puerto Rican interests. (1)

2. Relations between Mill Owners and "Colonos".

A relatively extensive area is essential to produce the sugar cane required by a modern mill. In some instances the cane required by the mill is purchased from a great number of individual farmers and this makes it extremely difficult to get a uniform flow of cane. Under such conditions, it is particularly essential for the mill to have more control over part of its cane supply than that usually exercised over the growth and harvest of the cane produced by an independent grower. In many areas such control is obtained through the mill growing part of its own cane or through contracts between the mill and independent growers. Puerto Rico constitutes no exception in this respect. In 1939, the mills on the Island themselves grew 25 per cent of the cane they ground and acquired over 75 per cent from "colonos".

The mills usually have contracts with most of the independent growers who supply them with cane. These contractual agreements set down the terms under which the mill will buy cane from the grower (colono), make crop loans to him, and conduct various collateral matters connected with the colono's farming and financial activities. These contracts provide for payment either on the basis of percentage of sugar recovered from the cane, or on the basis of a quantity of sugar equivalent to a specified percentage of the weight of the cane. In most cases, however, the mill either acquired the farmer's sugar cane or sells the sugar obtained from

(1) Smith, Dudley and Requa, William M., "Puerto Rico Sugar Facts", Association of Sugar Producers of Puerto Rico, Washington, 1939, Page 67.

the cane for his account, such settlement usually being made on the basis of New York prices or such prices adjusted to an f.o.b. mill basis.

Another part of the contractual agreement entered into by the mill and the "colono", usually covers the financing of these growers. A very large number of them are financed during the growing and harvesting seasons by anticipations from the sugar mills, which are collected by deductions from amounts due for sugar cane. This financing arrangement gives the mills substantial control and authority in supervising the farming operations of farmers. The mill owners usually borrow from the banks the money which they anticipate. Some independent growers borrow funds directly from banks, some from Federal lending institutions, some from private sources, and some finance themselves, but the financing by mills is the more common.

The relations between owners and "colonos" are strictly regulated by the law passed by the Puerto Rican legislature in 1937 which provides that in all future "colono" contracts the "colono" must receive, subject to certain necessary minor adjustments needed to meet special conditions, 65 per cent of the yield of his cane. Among other provisions tending to further regulation of the mill owner-colono relationship are the following: (1) the "colono" is not responsible for damage suffered by the cane after he has taken it to the place and in the manner agreed; (2) mill owners may specify the cane varieties to be covered by the agreement; (3) delivery of cane by "colonos" has to be made free from trash and earth; (4) requirement is placed upon the mill to grind the cane within twenty-four hours after delivery; and (5) a Sugar Board is created to act as referee in conflicts arising between mill owners and independent growers relative to liquidation of cane.

3. Production Share of Mills and "Colonos".

The mills in Puerto Rico produce a substantial part of the cane they grind. Of the Island's forty-one mills, 29 grow part of their cane on lands operated in connection with the mill, and acquire the rest of the cane they grind from other growers. The mill plantations raise 23 per cent of the cane, on the average, harvesting and moving it in such a way as to complement that bought from small growers and thus keep constant their flow of cane to the mill, thereby avoiding operating losses.

Associated producers grow part of the cane for about 12 mills. There are about nine such producers in the Island, who in some instances are partners in the mill operations but operate their own farms independently of the mill business. These farmers grow about 25 per cent of the cane and receive payment from the mill on the same basis as other farmers. They have been classified as "processor producers", and are distinguished from other farmers only in that there is an indirect connection between the individuals operating the farm and the mill enterprises.

Sugar cane was harvested in 1939 from about 11,350 farms which were operated independently of any mill organization. These farms operated by independent growers (colonos) have no connection with the mills except that resulting from contractual agreements to furnish cane to the mills. The bulk of these contracts are on a yearly basis and provide the basis of settlement for cane received from other growers.

The "colonos" grew more than half of the sugar produced in Puerto Rico in 1939. The proportion of the cane grown by them has been increasing for a number of years, reaching a peak level in 1938-39. The quantity grown by mills, on the other hand, has been decreasing, and in 1938-39 reached its lowest amount.

4. Ownership and Control.

From the viewpoint of the acreage upon which sugar cane is cultivated, nearly 30 per cent of all the sugar cane acreage in Puerto Rico was cultivated by the mills in 1935. The independent growers, on the other hand, operated more than 70 per cent of all the sugar cane land in the Island during the same period. A considerable portion of the area upon which sugar cane is grown does not belong to the operator. This is true both in the case of the sugar mills and in the case of the "colonos". Of the land included in mill plantations upon which cane was grown in 1935, nearly 70 per cent belonged to the mills and 30 per cent was leased from others. Of the land upon which sugar cane was produced by "colonos", nearly 25 per cent was rented (see Table XXI). Thus, more than 25 per cent of all land in cane in 1935 was rented by the operator.

Table XXI

Tenure of Land in Sugar Cane, 1935.

	: Mill	: Independent	: All
	: Plantations	: Farms	: Farms
Total acreage in cane:	:	:	:
Owned (1,000 acres)	: 64.9	: 168.8	: 233.7
Leased (1,000 acres)	: 28.6	: 55.8	: 84.4
Total (1,000 acres)	: 93.5	: 224.6	: 318.1
Percentage of land in	:	:	:
cane:	:	:	:
Owned (Per Cent)	: 69.0	: 75.0	: 73.5
Leased (Per Cent)	: 31.0	: 25.0	: 26.5
Total (Per Cent)	: 100.0	: 100.0	: 100.0

Source: Based upon data furnished by producers, reports of the Sugar Section, A.A.A., U.S. Department of Agriculture and Census of Puerto Rico, 1935.

Most of the land upon which sugar cane is grown in Puerto Rico belongs to residents of the Island. In 1935, more than 86 per cent of the

sugar cane lands is estimated to have been under local ownership. Of nearly 318,000 acres in cane that year, about 44,150 acres, or 13.9 per cent, were owned by foreigners. Of this total approximately 40,000 acres, or 12.6 per cent were owned by continental interests. The remaining 274,000 acres, including mill plantations belonging to Puerto Ricans, were in the hands of local individuals. This was 86.1 per cent of the total acreage in sugar in the Island.

5. Size of Sugar Farms.

The total amount of land, both arable and non-arable, in farms growing cane in 1934-35 was reported by the Sugar Section, A.A.A., San Juan office, as 765,375 acres. These figures underestimated the holdings of one company (Luce and Co.) which did not sign a contract with the A.A.A. by at least 6,000 acres. Including this last figure, 771,000 acres has been regarded as a very close estimate of the total land in sugar-cane farms.

Table XXII

Distribution of Farms of Sugar-Cane Growers
by Size of Farms, 1934-35.

Size of Farm, in Acres	Number of Farms	Farm Area in Acres
Up to 5	2,558	7,093
6 to 10	1,222	9,618
11 to 25	1,526	25,074
26 to 50	897	31,998
51 to 200	1,058	104,641
201 to 500	276	87,729
501 to 1000	90	61,647
More than 1,000	66	436,945
Grand Total	7,693	765,375

Source: Sugar Section Agricultural Adjustment Administration Release of August 24, 1936.

The A.A.A. also reported 7,693 farms in cane for the same year.

According to a release made by the Sugar Section, A.A.A., in August 24, 1936, there were 5,306 farms of 25 acres or less totaling 42,000 acres; 2,231 farms over 25 and under 500 acres totaling 224,000 acres; and 156 farms above 500 acres totaling 499,000 acres (See Table XXII).

A release of the Puerto Rico Reconstruction Administration dated May 10, 1937, places the total number of cane farms in 1935 at 6,620. According to the release figures 3,632, or 54.9 per cent of the total farms in cane had 10 cuerdas or less. About 44 per cent of these farms had no more than 499 cuerdas and no less than 10, while only one per cent of the total farms in cane had over 500 cuerdas. The A.A.A., on the contrary, reported only 1,222 farms having less than 10 acres, and 156 farms having over 500 acres. The A.A.A. figures are, however, based on actual growers' contracts, and as such are presumably more nearly accurate than the P.R.R.A. census figures.

The A.A.A. figures on land planted to sugar cane in 1934-35 totalled 317,992 acres. There were 5,641 farms with ten acres or less in cane having a total of 19,239 acres; 1,879 farms with 11 to 200 acres

Table XXIII

Distribution of Farms to Sugar-Cane Growers
by Acreage of Sugar-Cane, 1934-35.

Cane Acreage	Number of Farms	Area in Cane, Acres
Up to 2	2,736	3,954
3 to 13	2,905	15,285
14 to 25	986	16,079
26 to 100	752	37,086
101 to 200	141	20,098
201 to 500	114	35,259
More than 500	59	190,231
Grand Total	7,693	317,992

Source: Sugar Section, Agricultural Adjustment Administration, August 24, 1936.

totaling 73,263 acres; and 173 farms with over 500 acres in cane totaling 225,490 acres (see Table XXIII). The P.R.R.A. release cited before, recorded 346,154 acres of cultivated land on 6,620 farms. The larger cultivated area presumably covered some land in crops other than sugar cane.

Most of the new farms that between the years 1929 and 1939 came into sugar cane production were small. The total number of sugar cane farms during this period rose from 7,103 to 11,381. Nearly all of these farms harvested 10 acres of cane or less and most of these had less than 2 acres.

The average acreage of sugar cane per farm in the Island was about 33 acres in 1938, and but 27 acres in 1939. It increased approximately 30 per cent from 1909 to 1935. From 1935 to 1939, the average sugar cane acreage decreased approximately one-third. This decrease was due to sugar quotas allocated among old growers which resulted in acreage reduction, but which left enough latitude for new growers to come into sugar production and thus obtain quotas.

The average sugar cane acreage increased nearly 80 per cent from 1909 to 1935. This increase is attributed mostly to increased plantings on farms already growing sugar cane. However, a drop of approximately 30 per cent occurred in the average sugar-cane acreage from 1935 to 1939 due strictly to Federal sugar control.

The acreage of sugar cane grown on individual farms in Puerto Rico varies from one-tenth of an acre or less, up to several thousands acres. More than 50 per cent of the Island's sugar cane production is grown on farms where 100 acres of cane or more are produced. The average acreage of sugar cane harvested per farm in 1939 was 26.6 acres, as compared with

the average of 36.2 acres total land per farm for all farms in the Island.

6. Costs of Production.

The United States Tariff Commission in 1934 published a report on sugar costs. (1) The figures arrived at by the Commission as representative of the cost of sugar in the Island were the following:

Year	Cents per Pound
1929-30	2.54
1930-31	2.79
1931-32	2.29
3-year average	2.54

These figures were based on f.o.b. mill costs without interest, items that when added to the three-year average raise it to 3.28 cents.

Figures for other sugar producing areas were obtained also by the Commission which serve as a good basis for comparison with Puerto Rico's cost figures. These cost figures were computed using also f.o.b. mill costs without interest, and were as follows:

Producing Area	Cents per Pound
Cuba	1.33
Philippines	1.97
Puerto Rico	2.54
Hawaii	2.54
Louisiana	3.77

The Island, in this respect, is well above the Philippines and Cuba, at par with Hawaii, but below Louisiana. When imputed interest and transportation costs are added, the relative costs remain more or less on the same level.

The cost of cane is a major item in the computation of the cost of sugar. According to the United States Tariff Commission's findings, cane costs were a little over 70 per cent of total f.o.b. mill costs, either

(1) United States Tariff Commission, Report No. 73, Second Series, 1934.

including or excluding interest, for the three-year average, 1930-32. Costs per ton for 1930-31, excluding interest or land charges, were found to be \$4.334 for "colono" cane and \$4.485 for "company" cane. In 1931-32 they were \$3.765 and \$3.685 respectively. By a heavier loading of interest charges company costs were made to appear decidedly higher than "colono" costs. When imputed interest was added, cost figures for companies increased by \$1.118 and that for "colonos" by \$0.452 for 1930-31. In 1931-32 the increase was \$0.906 and \$0.382 respectively.

An analysis of cane costs made by Gayer, Homan and James (1) for the year 1931-32 shows that the computed cost of company cane varied from \$3.51 to \$5.54 in 10 mill districts surveyed, and that the cost to the company of cane purchased from "colonos" varied from \$3.32 to \$4.55 in the same districts. The difference between the price paid by the company for cane acquired from the independent growers and the computed cost of company cane varied from 8 cents in one district to \$1.61 in another, with an average difference of 85 cents for the ten districts included in the comparison.

7. Sugar-Cane Yields.

There are no available figures for recovery of sugar per ton of cane before 1919. Data compiled by the Association of Sugar Producers of Puerto Rico show a recovery of 9.74 tons of cane per ton of sugar for the period 1919-23, and of 8.49 for 1931-35. The yield per acre of sugar cane land, on the other hand, was found to be 17.7 tons of cane per acre for the five-year period 1919-23, and 27.9 tons for 1931-35.

(1) Gayer, A.D., Homan, P.T., and James, E.K., "The Sugar Economy of Puerto Rico," Columbia University Press, N.Y., 1938.

Table XXIV

Yield of Sugar per Acre According to Acreage
of Sugar-Cane Farms, 1934-35.

Distribution of Farms by Area of Cane Acreage (in acres) <u>b/</u>	Yield of Sugar Cane per Acre (in tons of 2,000 pounds)	
	Unweighted Average	Weighted Average <u>b/</u>
Up to 2	2.41	
3 to 10	2.77	
11 to 25	2.89	
26 to 100	3.39	
101 to 200	3.43	3.46
201 to 500	3.93	3.90
More than 500	4.43	4.57
Grand Total	3.33	4.27

Source: Gayer, A.D., Homan, P.T., and James, E.K., "The Sugar Economy of Puerto Rico," Columbia University Press, N.Y., 1938.

b/ The weighted average was introduced as a check on possible distortion in the unweighted averages, arising out of the small number of farms in the high acreage groups.

Figures of the Sugar Section, A.A.A., as released in 1936, show the recovery of sugar per acre for farms of different sizes. The Island average was found to be 3.33. The yield varied from 2.41 tons per acre on the smallest farms to 4.43 tons on the largest, the yield showing an increasing trend as the size of the farm increased (see Table XXIV).

A study made by the Division of Agricultural Economics, University of Puerto Rico, on the organization and earnings on 130 sugar-cane farms in Puerto Rico, 1934-35, shows that on the 6,546 cuerdas of sugar cane harvested for sugar on these 130 farms, the average yield per cuerda was 30.3. (1) This yield was only slightly less than that estimated for the whole Island by the Association of Sugar Producers. According to the association cane harvested for sugar during the year averaged a yield of 31.6 tons for the whole Island.

(1) Descartes, S.L., "Organization and Earnings on 130 Sugar-Cane Farms in Puerto Rico, 1934-35," Bulletin 47, Division of Agricultural Economics, University of Puerto Rico, 1938.

8. Returns to Growers.

The independent grower's returns are determined by the contract existing between himself and the mill. As has already been stated on page 93, growers either receive settlement for their cane on the basis of a quantity of sugar equivalent to a specified percentage of the weight

Table XXV

Comparative Returns to Independent Growers In
Puerto Rico, Louisiana, and Florida,
1938-39.

Returns to			Returns to			Percentage of		
Price	growers per		Price	growers per 100		f.o.b. mill returns		
for	ton of cane		for	pounds of sugar		going to growers		
Sugar	Puerto Rico	Louisiana	Sugar	Puerto Rico	Louisiana	Puerto Rico	Louisiana	Florida
Cents								
Pound	\$'s	\$'s	Pound	\$'s	\$'s	%	%	%
2.80	4.13	2.56	2.93	1.65	1.53	1.38	65.8	57.7
2.90	4.29	2.69	3.10	1.72	1.61	1.45	65.8	58.4
3.00	4.45	2.82	3.26	1.78	1.68	1.53	65.7	59.1
3.10	4.62	2.95	3.43	1.85	1.76	1.61	65.7	59.7
3.20	4.78	3.08	3.60	1.91	1.84	1.69	65.7	60.4
3.30	4.94	3.22	3.76	1.98	1.92	1.76	65.7	61.0
3.40	5.10	3.36	3.90	2.04	2.00	1.83	65.6	61.7
3.50	5.27	3.50	4.04	2.11	2.09	1.89	65.6	62.3
3.60	5.43	3.64	4.20	2.17	2.17	1.97	65.6	63.0
3.70	5.59	3.79	4.37	2.24	2.26	2.05	65.6	63.7
3.80	5.75	3.91	4.52	2.30	2.34	2.12	65.6	64.0

Source: Smith, Dudley and Requa, W.M., "Puerto Rico Sugar Facts," Association of Sugar Producers of Puerto Rico, Washington, 1939.

of the cane or on the basis of the percentage of sugar recovered from their cane. In nearly all cases the grower receives for his sugar the average New York duty-paid price, or such price adjusted to f.o.b. Puerto Rico basis, for the fortnight or month in which the cane is delivered.

Recently, the independent grower's share in the net proceeds of sugar recovered from his cane has increased due to local laws regulating settlement to independent growers, to regulations issued by the Secretary

of Agriculture pursuant to the Sugar Act of 1937, and to other conditions.

In 1937 the Puerto Rican grower received approximately 63 per cent of the mill returns from the sugar from his cane. In 1938, and again in 1939, the independent grower received slightly in excess of 65 per cent of the net returns (see Table XXV). Such returns compare favorably with those received by other areas. For example, with a price for sugar of 3.4 cents per pound, growers would receive about \$5.10 for an average ton of cane in Puerto Rico, \$3.36 in Louisiana, and \$3.90 a ton in Florida (see Table XXV).

Independent growers' returns are usually increased by bonuses paid to them for delivering their cane to the mills by truck, or for weighing and loading the cane in cars. It has been estimated that in 1937, 18 mills paid independent growers transportation bonuses averaging 46.2 cents a ton of cane on 43 per cent of the independent grower cane they ground. In 1937, bonuses alone increased the percentage returns to growers from 63 per cent to more than 64 per cent, and in 1938 from 65 per cent to 66 per cent.

9. Earnings of Mills and Mill Plantations.

Sugar mill earnings have shown substantial variation between the different units of production. Such fluctuation may be attributed to such causes as land location, unit size, rainfall, temperature, hurricanes and various other climatic phenomena, the proportion of the cane produced by the mill plantations, location of the cane supply, management, labor conditions, cane-varieties produced, price variation, demand conditions, sugar cane diseases, and business depressions. The effect of these factors is shown in the fact that between 1931 and 1935, a group of representative mills, situated on the northern part of the Island, earned 3.9 per cent on their net worth annually on the average, while another group of mills located on the southern side of the Island earned 10 per cent on their net

worth. Weather factors accounted mainly for such a discrepancy in earnings between these two sections. Drought in the northern section of the Island was severe in 1931, and storm damage in 1932-33 much more extensive than in the southern section.

The earnings of the sugar industry represent what is left over after total expenses are deducted from the total income of sugar produced. These averaged 5.5 per cent annually during the eighteen year period, 1921-32. In the same period five beet sugar companies, which account for approximately three-fourths of the continental beet sugar output, earned 4.5 per cent each year, and 25 Hawaiian companies, representing five-sixths of the Hawaiian output, earned six per cent on their net worth annually as an average. (1)

Earnings of the sugar mills and mill plantations in Puerto Rico have ranged from a net loss of 6.1 per cent to a profit of 15.6 per cent. Sugar prices dropped drastically during the latter half of 1920 and continued declining well into 1922. The combination of low yields, low prices, and high production costs caused most of the industry to suffer losses in 1921, and the industry as a whole to incur a 6.1 per cent loss. Despite the continuance of low yields, some recovery was made in 1923 which resulted in a profit to the industry of more than 12.5 per cent. Earnings, however, continued at a reduced rate until 1928 due to low yields. In 1929, the industry as a whole suffered a substantial loss as a consequence of storm damage. During the whole decade of the 1920's the industry earned slightly more than five per cent annually on the net worth.

(1) Smith, Dudley and Requa, W. M., "Puerto Rico Sugar Facts", Association of Sugar Producers of Puerto Rico, 1939, Page 100.

The industry's losses did not disappear with the 1929 hurricane. Most of the industry had substantial losses in 1931 due to weather factors, and again in 1933, from property damage and low yields caused by the 1932 hurricane. In 1934, better results were obtained due to an increased sugar quota. About one-third of the cane produced in 1935 was left standing, and, even with benefit payments to growers, earnings were low, but this reduction allowed part of the 1934 to be sold. The savings in the cost of production on the 1936 crop, by reason of having a substantial portion of the cane left over from 1935, together with those which resulted from planting little cane for subsequent years, resulted in an abnormally high rate of earnings in 1936. Output exceeded quotas in 1937 and 1938 which resulted in the low earnings of this last year. The 1939 earnings were the lowest since the drought year 1931, and, with the exception of 1931 and 1929, the lowest since 1924.

10. Dividends.

A large part of the earnings of the sugar industry in Puerto Rico have been reinvested in the business instead of being paid out as dividends to the stockholders. Owners' incomes, therefore, have been much more lower than the earning records. Moreover, the dividend record of both corporately owned and privately owned concerns shows that the economic position of the industry and the welfare of other groups which have claims upon it have not been jeopardized by payment of dividends when earnings were not high.

During the 18-year period 1921-38, only 62 per cent of the net income produced by the Island's sugar industry was paid to stockholders in the form of dividends. The rate of dividend during this period was 3.8 per cent of the net worth. In the years 1930-36, when sugar income was at a low

level, 10 of the Island's sugar companies owned by the investing public, paid out only 60 per cent as much as was earned.

11. Labor and Working Conditions.

It has been estimated that the Puerto Rican sugar industry employs about 125,000 workers at the peak of the season, or about 25 per cent of the persons gainfully occupied in the Island as reported by the 1930 Census. The majority of these--about 114,000--are field workers, and represent from 40 to 50 per cent of the farm workers of the Island.

About twice as many people are employed on sugar cane farms in the Island in relation to acreage and output as in other domestic sugar cane areas. On the basis of 1935 census data, approximately 38 persons were working on sugar farms for each 100 acres in sugar cane, and one person for each ten tons of sugar produced. Not only is this so, but the number of days of work afforded by a given acreage of cane is also greater. Both the greater number of men employed and the larger number of days of work are due to several conditions, among which are the shorter work-day, the routine of employing labor instead of labor-saving machinery wherever costs are not too high, and the policies of providing incomes for as many persons as possible, by dividing up the work.

Seasonal variation in employment is an outstanding characteristic of the sugar industry. Its cycle is perhaps more pronounced, in some ways, than that of many other agricultural activities, as the perishable nature of the raw product makes the cycle of sugar manufacturing harmonize closely with the cycle of cane planting and cultivation. It thus presents the serious problem of intensive employment during the cutting and grinding season, followed by a dull period when great numbers of laborers must seek

work elsewhere. The months of highest employment are March to June, inclusive, and those of lowest employment, November and December. Employment in the lowest month of the year, from the viewpoint of the number of days or hours worked, is only about 50 per cent as large as in the highest month of the year. In dull periods seasonal variations are minimized by spreading the work over as large a number of workers as possible. In this way most of the employees have some work and income, although only a few work full-time. Due to this practice of dividing up the work and the lower percentage of time worked by individual laborers, weekly or annual incomes of individual workmen have not risen as rapidly as wage rates. The industry is frequently criticized on this account, and upon the fact, that, owing to the share-the-work policy, the actual individual earnings are far short of the full-time rate.

Wages in the Island's sugar industry are fixed by collective bargaining. Each fall or winter representatives of the employers and of the workers meet to negotiate a wage contract for the next year. These contracts provide daily wage rates for nearly 70 different classes of field, factory, and railroad labor. In addition, the agreement specifies working hours, the date and form of settlement, certain measures for cleanliness and health, the right of workmen to unionize, and the method to be followed in case of conflict. Also, and at the requirement of the labor union, it prohibits contract and piece-rate work.

Puerto Rico represents a unique case in that it is probably the only sugar producing area in the world where wages are specified by collective agreements. In fact, a larger number of farm laborers are covered by collective bargaining in the Puerto Rican sugar industry than in any other area in the world.

A great part of the sugar cane labor in the Island lives in houses provided by the growers. These houses are rent-free, and often the dweller receives free light and water and rent-free land upon which to grow fruits and vegetables. In addition, many employers operate stores where the workmen may buy staple products at prices which are substantially lower than those charged by any other nearby establishments. Sugar cane labor is also extensively benefited by social laws regulating working conditions. The work-day for all employees is limited by law to eight hours, and no child or woman labor may be employed in the sugar industry. In addition, labor in the sugar cane fields, as well as that in the railroads and the mills, is covered by workmen's compensation insurance.

C. Federal Program of Agricultural Adjustment.

1. Analysis of the Laws of 1934 and 1937.

Puerto Rico's sugar output has been restricted since 1935 under the sugar program established pursuant to the Jones-Costigan Act and the Sugar Act of 1937. The major objectives of the Jones-Costigan Act of 1934 were to try out a system of quotas with the purpose of keeping the price of sugar at a low level to consumer, of providing for the retention of beet and cane farming within United States' continental limits, and also to provide against further expansion of the industry. Under the Act the Secretary of Agriculture was empowered to enter into contracts with growers for the adjustment of their production of sugar beets and sugar cane on the basis of the allocation of sugar quotas fixed by him for each of the sugar-producing areas supplying the continental markets. The Act also provided for a processing tax on sugar of 50 cents per hundred pounds, raw value, the money to be made available to growers of sugar beets or cane

who abided by the restriction program as determined by the Secretary of Agriculture.

Aside from the differential treatment in quota allocations and determination of benefit payments to growers, the Jones-Costigan Act embodied three major discriminations against off-shore domestic areas:

(1) provision for a minimum statutory quota for the continental areas with no corresponding minimum quota for off-shore domestic areas; (2) assurance of a minimum share in any increase in consumption to continental producers with no corresponding assurance for the other domestic areas; (3) restrictions were placed upon the marketing of sugar from the territories with no corresponding limitation on the sugar produced in other domestic areas of the United States.

Under the Jones-Costigan Act, Puerto Rico's participation in the domestic market was reduced from 13.01 per cent provided in connection with the Sugar Stabilization Agreement undertaken in 1933 to 12.44 per cent. This was accomplished by guaranteeing minimum quotas to continental areas and giving them a participation of not less than 30 per cent of any increase in consumption above 6,452,000 tons of sugar, and by spreading the rest of the consumption requirements among Puerto Rico, Hawaii, the Virgin Islands, the Philippine Islands, and foreign countries on the basis of the average quantities of sugar marketed during the three most representative years of the nine-year period, 1925-33. No three years of this nine-year period provided by the Act were representative of the level of production existing in the Island at the time of the approval of the legislation. This period included mostly years which were prevented from being representative by sugar cane diseases which reduced both acreage and

yields. While the three years (1931, 1932 and 1933) selected as a basis for Puerto Rico's marketing quota were the three highest of the nine-year period provided by the Act, they fell at a time when the Island was recovering from the devastating effects of cane diseases and other disasters, and failed to include any year of normal conditions.

The provisions of the Jones-Costigan Act were applicable only to the end of 1936, but were extended to the end of 1937. Continuation of the Federal sugar control after this date was provided under the Sugar Act of 1937. This new legislation brought practically no new features into the adjustment program save the fact that it provided for the removal of the three major discriminations contained in the Jones-Costigan Act of 1934. Under the Sugar Act of 1937, Puerto Rico was permitted to supply only nine-tenths as large a percentage of mainland's sugar supply as had been agreed upon by all branches of the domestic and foreign sugar industry under the Sugar Stabilization Agreement.

2. Sugar Production under the Quota System.

When the Jones-Costigan Act was enacted, the supply of sugar in Puerto Rico as a result of the peak level in production reached in 1933-34 exceeded consumption requirements substantially as indicated by local needs and the quota for exportation to the continental markets. This made it essential to curtail production in the next year in such a way as to adjust the prevailing disparity between supplies and marketing requirements. Thus, sugar cane growers were offered \$4.00 a ton for the 1934-35 crop sugar cane which could not be processed because of the output adjustment. Nearly 7,800 growers signed contracts with the A.A.A. at San Juan which resulted in a reduction in output of approximately 376,000 tons of sugar. The actual production from the 1934-35 crop was 772,000 tons of sugar. Payments to growers on this year's crop totalled \$12,243,000.

For the year 1935-36 crop provision was made for the payment to producers of 35 cents per ton of sugar not processed as a result of production adjustment. Allotments were made to growers amounting to nearly 835,000 tons of sugar. Before payments could be made under this program, the entire agricultural adjustment program was declared unconstitutional by the Supreme Court on January 6, 1936, and thus invalidated the production adjustment programs. Since the adjustments for which the contracts called had been practically effected by all Puerto Rican sugar cane growers, a fund had to be provided to the Agricultural Adjustment Administration for compliance of benefit payments under the Puerto Rican program. This fund was at first derived from processing taxes on sugar produced in or coming from the Island. Payments to producers on the 1935-36 crop amounted to \$2,330,000.

No benefit payment program was put into operation in the Island for the 1936-37 crop, although allotments were made to producers for the purpose of allotting the insular marketing quota. In common with other domestic areas, a special soil conservation payment was made of $12\frac{1}{2}$ cents per 100 pounds of sugar, totaling approximately 2,500,000 dollars in Puerto Rico's case.

Payments for the 1937-38 crop were made under the provisions of the Sugar Act of 1937. These payments covered approximately 253,000 tons of sugar. In addition to the sugar upon which payments were made, the Island was permitted to produce about 130,000 tons of sugar in excess of the quantity needed to cover its quota and provide a normal carry-over inventory under that provision of the Sugar Act of 1937 which exempted the first crop harvested after the enactment of the act from the sugar

cane marketing restriction. Such surplus production in addition to the excessive output resulting from the previous year when no sugar program was in operation, brought total surplus stocks of sugar in the Island to approximately 330,000 tons which represented over one-third of their marketing requirements under the Sugar Act of 1937.

For the crop year 1938-39 the amount of sugar upon which payments could be made was reduced to approximately 846,000 tons, which was decided to be the quantity needed to enable the Island to cover its quota and provide a normal carry-over inventory. Since the Island's growers were required to remain within this output figure so as to have a right to benefit payments, the output for this year represented a rather substantial reduction from 1937-38, equivalent to nearly 852,000 short tons. In addition, enough cane was left in the field at the end of the 1939 crop to produce about 365,000 tons of sugar, making a total carry-over of approximately 775,000 tons in the bag and in the field, or about seven-eighths of a year's requirements.

When sugar quotas were suspended on September 11, 1939, Puerto Rico was able to dispose of all of the surplus sugar which it had been carrying since 1934 so that the total carry-over of unmarketed sugar into 1940 was not remarkable. Quotas, however, were again established by presidential order effective January 1, 1940. The basic sugar quota allowed to the Island for 1939-40 was substantially lower than that for 1938-39, and amounted to 797,982 tons. However, an allowance of 169,580 tons of normal carry-over inventory, plus 70,784 tons for local quota was granted.

3. Effect of the Sugar Program.

The following quotation made from Smith and Requa's "Puerto Rico Sugar Facts," indicates the main trend of thought in connection with the

effects of the adjustment program in Puerto Rico:

"Since Puerto Rico depends to such a large extent upon sugar production for income and employment, the per capita purchasing power of the Island during the period under sugar restriction was reduced approximately 16 per cent below the level prevailing during the midst of the depression. Most of Puerto Rico's income is based upon industries that produce for outside markets, and most of the goods used by the people are bought with the income obtained from these sales.

"In view of this, and since prices prevailing for sugar under the restriction program have increased much less relative to former levels than prices for items people buy, it has been necessary for the Island to increase its volume of sales in order to maintain the same volume of purchases. However, market restrictions have prevented the Island either from taking advantage of the efficiency of recently developed varieties of cane or the need to produce more sugar in order to obtain the same goods as formerly, and consequently have caused a reduction in the purchasing power of the people." (1)

Though it is true that the sugar program has reduced the Island's purchasing power and caused a serious dislocation in the Island's sugar producing industry, one must not overlook the fact that the restrictions to which sugar production has been subjected, have been responsible for the disappearance of sugar carry-overs and thus for the improvement in sugar prices which have ensued during the period of restriction.

(1) Smith, D., and Requa, W. M., "Puerto Rico Sugar Facts", Association of Sugar Producers of Puerto Rico, 1939, Page 37.

CHAPTER V

COFFEE

A. General Features of the Coffee Industry.

1. Geographical Aspects.

The land of the coffee bush in Puerto Rico is located in the western section of the mountainous backbone which runs through the interior of the Island. This region is the second most humid area of the Island. Mean annual precipitation at all sections, except the inclosed valley, is over 90 inches, and runs as high as 119.62 inches in Inabon Falls. In winter there is a drop in precipitation which marks off a season which, though not dry, is less rainy. This last peculiarity affects favorably the coffee industry since it provides for a less rainy period during blossom time.

The ideal coffee soil is found in the highlands north and west of Adjuntas. It is one of a pinkish color and of heavy texture, containing a high percentage of clay, found on the humid mountain sides and saddles, verging to brown with increasing humus content in pockets and on lower slopes. This soil and other environmental conditions impart to the Puerto Rican coffee a peculiar flavor, very popular in some markets, but not generally accepted in the continental United States.

The inland location of the coffee plantations in the mountainous area constitutes a handicap to the industry. Not only do agricultural operations result more costly than those performed on the level ground, but also the rugged topography impedes the application of mechanical equipment to production. Location of the plantations at a distance from the coast and ordinary methods of transportation and communication

not only brings higher marketing costs but also adds to the isolation and low standard of living prevailing in the coffee plantations.

2. Coffee Culture in Puerto Rico.

The coffee in the island of Puerto Rico is shade-grown. Such leguminous trees as the "guaba" and the "guama" are usually employed to provide shade since they furnish excellent diffusion of sunlight and offer protection from the devastating effects of strong winds. In some sections of the coffee belt bananas are also employed to "shade" the young coffee trees as well as the young leguminous trees. This last practice, however, has been considerably limited due to the spread in recent times of the Panama disease. Unless disease-resistant varieties are developed, no progress can be expected in such practice.

The Puerto Rican coffee tree is a perennial having a life cycle which runs over a period of about twenty-five years. Three periods are identified in this life cycle: (1) the seed-bed period, generally lasting from twelve to fourteen months, (2) the gestation period, or period preceding the bearing of the first full commercial crop, and usually extending about seven years, and (3) the bearing period, which generally lasts sixteen or seventeen years. Trees in these various stages of development are found in all coffee plantations in Puerto Rico.

The fact that the Puerto Rican coffee tree has an average life of about twenty-five years, and that all plantations in the Island have trees going through the various stages of this life cycle, makes hurricanes especially devastating to coffee culture in Puerto Rico. Hurricanes occur with highest frequency during the coffee harvesting season, resulting in destruction of the crop and in the impairment of tree capital. The destruction of the coffee and shade trees breaks the favorable ratio of trees

of bearing age to trees of non-bearing age. Hurricanes not only disorganize the credit structure, but also add to the risk of coffee culture, make uncertain the flow of coffee to the market, and increase the cost of producing and marketing the coffee.

Due to the natural conditions under which coffee is grown, almost no dependence can be placed on the market price of the crop to regulate its supply. Since the life cycle of a coffee tree runs over a period of about twenty-five years, the adjustment of production to market price takes place at a very low pace. If, for example, the market price of coffee should rise unexpectedly, making increase of output financially advisable, no substantial increase could be accomplished since newly planted trees would not come into full bearing for about seven years. If the market prices should go down, no sudden adjustment in production could be made since tree capacity could not be reduced due to the fact that coffee trees bear for approximately seventeen years.

Coffee production, besides embracing the planting and care of the coffee trees and the shade trees under which the coffee is grown, also includes the picking of the coffee berries from the trees when ripe, removing the pulp from the berries, and drying the coffee. The larger coffee plantations in the Island do all of these operations while many of the smaller farms turn the berries over to larger operators to do the pulping and drying. All these operations require a great deal of labor.

3. Structure of the Coffee Industry.

Coffee in Puerto Rico is largely "a small and poor man's crop". By this is not meant that coffee growing in the Island offers the poor man an opportunity to progress economically. It really implies that at present

most of the coffee growers are poor. In Puerto Rico the conditions favorable to a successful growing of coffee are lacking. The Island is small compared with most coffee-growing regions. It has no ample supply of rich, cheap virgin soil, and because of the soil fertility, the gestation period is relatively large, lasting approximately seven years. This creates an exceptionally large credit problem. Hurricanes occur from time to time, causing the loss of the berries on the trees, entirely wrecking most plantations and destroying varying portions of the standing-tree capital, and thus creating a most unfavorable ratio of trees of bearing age to trees of non-bearing age. This situation is further aggravated by the fact that labor cost in the Island is somewhat higher than that prevailing in the Central and South American coffee-growing areas. Moreover, the traditions of the Island are unfavorable to an efficient peasant culture. Dependency on imported foodstuffs and other necessities is too deeply rooted among the farm population and constitutes an unsurmountable difficulty in this last direction.

Under the above circumstances it is misleading to claim that coffee is a poor man's crop. "If it is a poor man's crop, it is so by default. Only by drastically changing certain conditions which now characterize the coffee-growing situation in Puerto Rico, can coffee be made a little man's crop in the sense of a crop which gives the little man a chance to earn a reasonably secure and respectable living. Such radical changes include soil restoration, introduction of a degree of subsistence farming as an integral part of the coffee culture, the reform from the ground up of the credit situation starting with hurricane insurance and going through a thorough process of coordinating and adjusting debts."(1)

(1) Zimmermann, Erich W., "Staff Report to the Interdepartmental Committee on Puerto Rico", Washington, 1940. Page 190.

Moreover, the chances of the poor man holding himself in Puerto Rican coffee are not good. The proprietors of coffee plantations enjoy different financial and social positions. Thus the devastating effects of recurring storms hardly affect the small land owners who, because of their financial weakness, are not able to maintain themselves in the coffee industry. Unless small land owners are vigorously organized in cooperative organizations and unless such organizations introduce into the coffee industry a sound managerial basis for the reform of the whole coffee-growing structure, the chances of improving the welfare of "the poor man" are virtually hopeless.

4. Market Organization.

Coffee, being a crop produced by a relatively large number of growers, offers quite a few marketing problems. It has to be carefully handled and well-graded if the best results are to be obtained. Moreover, the supply of coffee is irregular because of storm damage. By making uncertain the flow of coffee into the market, hurricanes render difficult orderly long-time market arrangements, producing frequently the disrapture and severance of trade connections. Irregularity of supply creates also a problem of storage and the need of extensive credit. In the past coffee growers have depended to a high degree on coffee merchants to supply them with the capital required by the marketing functions. Under these circumstances it is not strange to find that such financiers have played a vital part in the marketing organization and credit structure of the Puerto Rican coffee industry.

The marketing of Puerto Rican coffee is faced with unusual difficulties due mainly to the fluctuations in the supply of coffee occasioned by hurricane damage and to the small size of the crop, which results largely from antiquated and poor methods of cultivation and the depressed condition of the industry. Irregularity of supply has always offered considerable difficulties rendering necessary repeated efforts to win and rewin the good will of various marketing areas. Recently this factor has become much more significant. This has been a fact since it became apparent that the only course left to Puerto Rican growers was to seek a main market for their coffee in continental United States. If Puerto Rican coffee is to establish itself as a blend in continental United States, definite steps must be taken by growers to assure a regular supply to the roasters with which connections are established. This, in turn, would require a systematic program of coffee storage during years of large output and of reducing crop fluctuations due to storms to a minimum by means of the creation of nurseries and by means of reducing the gestation period by soil restoration. Unless this is done government participation through subsidies will have to continue for a long time if the coffee industry of the Island is to survive at all.

B. Importance of Coffee in Insular Economy.

1. Number, Acreage, and Value of Coffee Farms.

Next to cane acreage the acreage devoted to coffee growing is by far the most important. The 1935 Census recorded 9,644 farms upon which coffee was the principal source of income, and 1,596 farms on which both tobacco and coffee were important crops, but on which the value of the tobacco constituted one-third or more of the value of the coffee crop or

vice versa. Farms classified as coffee farms constituted 18.3 per cent of the total number of farms in the Island and covered an area of 401,342 cuerdas, or 21 per cent of all land in farms. Out of this area only 208,384 cuerdas, or 51.9 per cent of all land in coffee, were classified as cropland, 98,399 cuerdas as pasture land, and the remainder as other woodlands and waste lands. (1)

The 9,644 coffee farms enumerated by the census were given a total value of \$25,759,624, or \$64.18 per cuerda. Coffee farms operated by owners, of which the census recorded 8,002, were granted a value of \$17,802,320; those operated by managers, about 758 in total, a value of \$6,278,262; and those worked by tenants, 884 in all, a value of \$1,679,033.

The typical coffee farm is medium sized. According to the 1935 Census, there were 7,028 coffee farms of 14 cuerdas or less, 2,150 over 25 and under 99 cuerdas, 446 over 99 and under 499 cuerdas, and 20 farms above 500 cuerdas. In other words, 72.9 per cent of the total coffee farms in 1935 had 14 cuerdas or less, 26.9 per cent over 14 and under 499 cuerdas, and only 0.2 per cent over 500 cuerdas. Approximately 70 per cent of all the land in coffee was operated by owners, 22.7 per cent by managers, and only 7.3 per cent by tenants.

This wider diffusion of ownership in coffee growing is partly due to both the negative effect on profitableness of the absence of tariff protection and to the rugged topography which presents obstacles to large-scale farming and the application of mechanical equipment. Moreover, even this dispersion of ownership is more apparent than real. It could be said

(1) P.R.R.A., 1935 Census of Puerto Rico.

that, due to hurricane damage and the loss of markets, the commercial value of coffee farms has declined to such a degree that to-day the average mortgage debt exceeds the market value. Thus, through foreclosure of mortgages a large section of the Puerto Rican coffee-growing area has come under the control and ownership of former creditors, principally banks.

2. Employment and Wages.

Coffee was the main source of income in 1935 on 9,644 farms and, jointly with tobacco, the principal income-producing crop on 1,596 additional farms. (1) The planting and care of the coffee trees and the shade trees, the picking of the berries when ripe, and pulping and drying the coffee, provide the main basis of gainful work for the population of the interior sections of Puerto Rico. In 1935, 44,882 persons reported gainful occupations on coffee farms. (2)

Hourly and weekly earnings in coffee growing are relatively low. According to the Insular Department of Agriculture and Commerce hourly earnings in 1938 for both male and female workers were on the average .072 cents and .067 cents respectively. Actual earnings per week on a 48-hour basis for the same year were \$2.60 and \$2.11 for male and female workers respectively.

The income of the interior coffee sections of the Island as measured by the total value of production and of exterior sales has been lately decreasing substantially. This has resulted from the effects of storm damages and loss of markets in which the Puerto Rican coffee was usually marketed. As a consequence several thousand coffee growers and the labor

(1) Smith, Dudley, "Income Problems of Puerto Rico", Association of Sugar Producers of Puerto Rico, Washington, October 1939, Page 40.

(2) P.R.R.A., 1935 Census of Puerto Rico.

commonly employed on coffee farms have experienced more than 10 years of extremely low income. While much of the labor may be employed part of the time in other activities, many of the coffee producers have had little or no other income. This period of low income has manifested itself in the economic conditions of the workers and the coffee producers; i.e., reduced employment opportunities, lower purchasing power and lowered standard of living for coffee workers; delinquent taxes, delinquent payment of interest and principal; destruction and deterioration of coffee properties.

3. Coffee Exporting.

Coffee exports during the early decades of this century constituted an important part of the export trade of the Island, making up almost one-fifth of the value of out-bound shipments. During the period between 1900 and 1910 the industry recovered from the devastating effects of the 1898 hurricane. In the five-year period, 1910-15, exports reached their peak movement in volume and also in dollar value, with the exception of 1920. Shipments ranged from over 35,000,000 pounds at the beginning of the period to over 51,000,000 pounds towards the end of the period, and from about five million dollars to a little over eight million dollars. Since 1915 the amount of coffee exported declined steadily, reaching two low points in 1919 and 1923. After 1923 there was a gradual recovery up to 1926, when about 26,000,000 pounds at a value of over seven million dollars was exported to outside markets (see Table XXVI). Coffee lost its importance as an export commodity as a result of hurricane damages in 1928 which caused widespread disaster in coffee farms. The highest level reached since then was in 1937 when 8,340,114 pounds of coffee were shipped under a government subsidy plan. Coffee exports during 1940-41 totaled 8,172,166, according to

Table XXVI

Coffee Exports from Puerto Rico
Fiscal Years 1871-72 to 1939-40.

Year	Quantity (pounds)	Dollars	Year	Quantity (pounds)	Dollars
1871-72	18,355,133	-----	1907-08	35,256,489	4,304,609
1872-73	25,840,533	-----	1908-09	28,489,236	3,725,744
1873-74	17,769,195	-----	1909-10	45,209,792	5,669,602
1874-75	26,162,690	-----	1910-11	35,937,021	4,992,779
1875-76	20,826,390	-----	1911-12	40,146,365	6,754,915
1876-77	15,843,887	-----	1912-13	49,774,197	8,511,316
1877-78	17,051,486	-----	1913-14	50,311,946	8,193,544
1878-79	30,537,901	-----	1914-15	51,125,620	7,082,791
1879-80	21,832,862	-----	1915-16	32,144,283	5,049,283
1880-81	47,182,029	-----	1916-17	39,615,146	5,892,081
1881-82	29,435,416	-----	1917-18	37,618,613	5,505,316
1882-83	37,109,800	-----	1918-19	27,897,771	6,065,573
1883-84	25,756,611	-----	1919-20	32,776,754	9,034,028
1884-85	47,105,476	-----	1920-21	26,731,648	5,352,924
1885-86	36,436,769	-----	1921-22	23,402,127	4,316,859
1886-87	27,281,241	-----	1922-23	16,821,939	3,188,002
1887-88	50,489,967	-----	1923-24	21,859,215	4,595,811
1888-89	37,719,768	-----	1924-25	23,782,996	6,575,635
1889-90	43,300,983	-----	1925-26	26,332,756	7,071,407
1890-91	41,130,154	-----	1926-27	19,356,904	5,748,877
1891-92	46,704,544	-----	1927-28	7,837,800	2,596,872
1892-93	48,541,873	-----	1928-29	1,428,757	513,043
1893-94	49,803,672	-----	1929-30	433,901	151,550
1894-95	39,683,160	-----	1930-31	1,977,779	546,613
1895-96	57,961,291	-----	1931-32	589,602	154,903
1896-97	51,097,824	-----	1932-33	549,839	124,558
1897-1900	64,072,977	-----	1933-34	2,969,505	671,800
1900-01	12,157,240	1,678,765	1934-35	799,950	1,207,739
1901-02	26,906,399	3,195,662	1935-36	2,465,133	496,404
1902-03	35,207,139	3,970,574	1936-37	8,340,114	1,169,684
1903-04	34,329,972	3,903,257	1937-38	592,807	110,987
1904-05	16,949,739	2,141,019	1938-39	3,667,104	527,101
1905-06	28,290,322	3,481,102	1939-40	3,644,385	421,910
1906-07	38,756,750	4,693,004	1940-41		

Source: 1871-72 to 1889-1900--Cafeteros de Puerto Rico, 1889-1900 to 1939-40--Department of Agriculture and Commerce, Monthly Summaries of Foreign Commerce of the United States and annual reports, customhouse.

statistics recently compiled by the Insular Department of Agriculture and Commerce. A combined Insular and Federal subsidy made it feasible to stabilize

Coffee Exports from Puerto Rico
Fiscal Years 1971-72 to 1997-98

Year	Quantity (Cannisters)	Dollars	Year	Quantity (Cannisters)	Dollars
1971-72	10,330,118	10,330,118	1987-88	32,400,000	32,400,000
1972-73	25,000,000	25,000,000	1988-89	30,000,000	30,000,000
1973-74	17,000,000	17,000,000	1989-90	30,000,000	30,000,000
1974-75	20,000,000	20,000,000	1990-91	30,000,000	30,000,000
1975-76	20,000,000	20,000,000	1991-92	30,000,000	30,000,000
1976-77	15,000,000	15,000,000	1992-93	30,000,000	30,000,000
1977-78	15,000,000	15,000,000	1993-94	30,000,000	30,000,000
1978-79	30,000,000	30,000,000	1994-95	30,000,000	30,000,000
1979-80	21,000,000	21,000,000	1995-96	30,000,000	30,000,000
1980-81	27,000,000	27,000,000	1996-97	30,000,000	30,000,000
1981-82	27,000,000	27,000,000	1997-98	30,000,000	30,000,000
1982-83	27,000,000	27,000,000			
1983-84	27,000,000	27,000,000			
1984-85	27,000,000	27,000,000			
1985-86	27,000,000	27,000,000			
1986-87	27,000,000	27,000,000			
1987-88	30,000,000	30,000,000			
1988-89	30,000,000	30,000,000			
1989-90	30,000,000	30,000,000			
1990-91	30,000,000	30,000,000			
1991-92	30,000,000	30,000,000			
1992-93	30,000,000	30,000,000			
1993-94	30,000,000	30,000,000			
1994-95	30,000,000	30,000,000			
1995-96	30,000,000	30,000,000			
1996-97	30,000,000	30,000,000			
1997-98	30,000,000	30,000,000			

Source: 1971-72 to 1997-98 - Customs and Excise Department, Puerto Rico
1971-72 to 1997-98 - Department of Agriculture and Forestry, Puerto Rico
Notes: Excludes coffee exports to the United States and Canada for
Porto, Washington.

Statistics recently compiled by the United States Department of Agriculture and
Commerce. A statistical analysis and summary report is available to the public.

the price of this product by withdrawing excess stocks from the market. The coffee industry, however, continues in a critical situation despite all efforts to improve it.

3. Coffee Importance in Soil Conservation.

Despite the drastic reduction that has taken place in the coffee export trade during recent years, coffee still continues to be an important industry and to play an important role in the soil economics of the Island. This tree crop is perhaps the only crop suitable on a large scale for Puerto Rico's mountainous interior, an area which is of utmost importance to the Island since thousands of lives depend upon the income derived from its productive soil. Moreover, coffee plantations in this area are virtual forests and as such help considerably in the soil conservation and drainage regularity of the interior section of the Island.

Also, several of the rivers of the Island have sources in the coffee-growing area. Erosion in the upper sections of these rivers not only reduces the fertility in the coffee zone itself, but also affects indirectly the regularity with which the rivers flow as well as the fertility of the soil of the lowland regions. If widespread erosion and silting of streams and damage to land in the coastal regions are to be avoided, mountainous areas under coffee-growing must be kept under tree cover. In addition, the continued and regular supply of water for both irrigation and hydroelectric purposes is to a large extent dependent on the conservation of an adequate soil cover in the mountainous coffee area.

C. Changes in the Economic Position of Coffee.

1. Production, Exportation, and Prices of Coffee before American Occupation.

Production figures for coffee before 1880 are unreliable. Between

1880 and 1899 a consistent, though highly irregular, expansion of coffee production in the Island took place. Output figures for this period ranged from an average of about 38 million pounds during the first part of the period to a peak level of about 65 million in the last year.

Coffee exports, on the other hand, averaged in the following way from 1871 to 1897:

1871-1875	22,031,888 pounds
1876-1880	21,218,505
1881-1885	37,317,867
1886-1890	39,045,746
1891-1895	45,172,681
1896-1897	54,529,557 (1)

The year 1897 is the last for which these statistics are available before 1901. It is known, however, that between 1897 and 1900, 64,072,977 pounds of coffee were exported from Puerto Rico. The average selling value of the different grades of Puerto Rican coffee was about 6 cents from 1850 to 1870, a little over 6 cents in 1880, about 12 cents in 1890, and over 23 cents in 1897.

More than half of the crop sent out of the Island during this period went to Cuba and Spain, markets in which Puerto Rican coffee enjoyed special tariff protection and which by 1897 were practically lost to the Island. In 1897 the exportations of coffee to the United States did not reach 110,000 pounds.

2. The Coffee Situation from the period of American Occupation to the Break of World War I.

At the time of the American occupation the Puerto Rican coffee industry was very deeply affected by the disappearance of the tariffs or

(1) This figure is taken from Carroll's "Report on the Island of Puerto Rico," U.S. Government Printing Office, 1899.

bounties provided under the Spanish regime. The Island's coffee found itself suddenly faced by keen competition with Brazil and other coffee-growing areas of the world. Moreover, it found its old protected market of Spain and Cuba cut off or curtailed by tariffs. To add to these misfortunes, in 1899, shortly after the American occupation, a devastating hurricane visited the Island, which brought enormous damage to coffee plantations. This hurricane occurred in August of that year, just before the harvesting of the crop, causing the loss of all the berries on the trees, impairing the tree capital and thus the favorable ration between bearing and non-bearing trees, and washing the fertile surface soils into the lowland regions.

Recovery from the 1899 disaster was slow. The production of coffee recovered fairly rapidly and by 1913-15 had once more passed the million pound level. Exports, on the other hand, advanced gradually between 1900 and 1910, but increased rapidly between 1910 and 1915. In 1914-15 coffee exports reached their highest mark in volume when over 51,000,000 pounds were shipped to exterior markets. Most of these exports went to Italy, Austria, Germany, France, the Netherlands, Sweden Czechoslovakia and other countries where Puerto Rican coffee was held in high esteem. The average value per exported pound of coffee between 1900 and 1910 was about 11 cents, and from 1910-11 to 1914-15, about 16 cents. The highest price for the product was obtained in 1912-13 when the average value per exported pound was over 17 cents and exports reported a total value of \$8,511,316.

3. Difficulties during World War I and its Aftermath.

The World War of 1914-18 interrupted trans-Atlantic shipping and dislocated the European market where the largest portion of the Puerto Rican coffee crop was marketed. This situation was responsible for the

substantial reduction in coffee exportation during the period. Exports declined from a high of over 51 million pounds in 1914-15 to a little below 28 million pounds in 1918-19, or a drop of about 45 per cent in the whole period.

Post-war developments, on the other hand, rendered the recovery of the Puerto Rican coffee industry well-nigh impossible. Economic and social difficulties created by the war together with the rise of economic nationalism and a trend to bilateral trading and imperial preference militated against the recovery of the European markets for the coffee produced by the Island. Furthermore, the collapse of the sugar market during the twenties which forced Cuba to launch a strong campaign of crop diversification and to the development of its own coffee industry resulted not only in the loss of the Cuban market but in the creation of competition until then unforeseen in the export markets.

Though production rose steadily after 1918, exports declined substantially. Coffee exportation decreased from a level of about 33 million pounds in 1919-20 to a low of about 8 million pounds in 1927-28. The average value per exported pound of coffee was, however, higher than for previous periods, and averaged $24\frac{1}{2}$ cents, for the period 1918-28.

4. The Coffee Situation After 1928.

The condition of the coffee industry which for several years had been showing a continuous decline, was further aggravated by the hurricane which visited the Island on September 13, 1928. Such a shortage in production was caused by this cyclone that many merchants in the Island were induced to look at other markets for this product to cover the demand requirements of their customers. This situation led to the importation of a much larger quantity of roasted coffee than that imported during previous

years for local consumption from the United States and foreign countries. Over one million pounds of coffee were brought into Puerto Rico during 1927-28, about 5 and a half million in 1928-29, and over 10 million pounds in 1929-30 (see Table XXVII). This importation of coffee into the Island led the Insular Legislature to pass Joint Resolution No. 59, levying an

Table XXVII

Receipts of Coffee in Puerto Rico
Fiscal Years 1925-26 to 1939-40.

Imports from the		Imports from		Total	
United States		Foreign Countries		Imports	
Quantity :		Quantity :		Quantity :	
(pounds) :	Dollars	(pounds) :	Dollars	(pounds) :	Dollars
1925-26 :	21,653:\$ 6,466	----- : \$-----		21,653 :	6,466
1926-27 :	424 :	147 : -----		424 :	147
1927-28 :	854,236 : 205,589	351,587 : 100,076		1,205,823 :	305,665
1928-29 :	4,144,674 : 1,005,324	1,331,624 : 349,583		5,476,298 :	1,354,907
1929-30 :	8,340,848 : 1,322,047	1,906,187 : 425,609		10,247,035 :	1,747,656
1930-31 :	5,493,543 : 846,935	732,284 : 147,066		6,225,827 :	994,001
1931-32 :	1,448,598 : 163,584	613,895 : 71,638		2,062,493 :	235,222
1932-33 :	566,512 : 71,033	799,986 : 112,199		1,366,498 :	183,232
1933-34 :	13,539 : 2,536	2,910 : 484		16,449 :	3,020
1934-35 :	341,374 : 42,546	1,071,325 : 133,592		1,412,699 :	176,138
1935-36 :	18,948 : 2,750	----- : -----		18,948 :	2,750
1936-37 :	17,102 : 5,302	----- : -----		17,102 :	5,302
1937-38 :	6,078 : 1,375	----- : -----		6,078 :	1,375
1938-39 :	6,113 : 1,682	----- : -----		6,113 :	1,682
1939-40 :	8,560 : 2,159	----- : -----		8,560 :	2,159

Source: Department of Agriculture and Commerce of Puerto Rico, Monthly Summaries of Foreign Commerce of the United States, and annual reports, customhouse.

import duty of 10 cents on all coffee brought into Puerto Rico. This being primarily a Federal matter, the authority of the U.S. Congress had to be obtained. It was granted to the Insular Legislature by means of a special provision in the United States tariff law, and therefore, Joint Resolution No. 59 became effective on August 1, 1930. It was hoped that this sort of legislation would avoid the unduly flooding of the market with other coffees

which could produce a change in consumers' taste and thus permanently injure the coffee industry of the Island.

Coffee exports that in 1927-28 had been about 8 million dollars declined to about one and a half million in 1928-29, and to less than half a million in 1929-30 (see Table XXVI). The production of coffee, on the other hand, declined from a high of over 32 million pounds in 1927-28 to a low of a little above 5 million in 1929-30 (see Table XXVIII).

Table XXVIII

Coffee Production in Puerto Rico
Fiscal Years 1920-21 to 1940-41.

Crop Year	Production (pounds)
1920-21	44,194,219
1921-22	38,367,875
1922-23	25,271,306
1923-24	28,908,342
1924-25	34,177,196
1925-26	36,334,570
1926-27	39,124,692
1927-28	32,393,259
1928-29	18,446,602
1929-30	5,351,599
1930-31	6,000,000
1931-32	10,090,219
1932-33	11,381,096
1933-34	9,000,000
1934-35	8,000,000
1935-36	20,000,000
1936-37	20,536,996
1937-38	16,639,200
1938-39	18,949,198
1939-40	23,498,000
1940-41	15,500,000 <u>1/</u>

1/ Estimate.

Source: Department of Agriculture and Commerce of Puerto Rico.

By 1931 Puerto Rican coffee growers were still feeling the disastrous effect of the 1928 hurricane. During this year in order to obstruct more extensively the importation of coffee the Insular Legislature approved

Act No. 78 imposing a duty of 15 cents on every pound of foreign coffee brought into Puerto Rico. Despite such efforts the Island imported over 6 million pounds of coffee in 1930-31 and a little over 2 million in 1931-32. Coffee exports, on the other hand, amounted to 1,977,779 pounds in 1930-31, but declined pretty drastically after that year.

In the year 1932 another hurricane struck the Island that came close to wrecking the entire coffee industry. Coffee exports dropped considerably after this year, reaching a low level of 549,839 pounds in 1932-33 (see Table XXVI). Coffee imports also decreased during this year as a result of the increased duty.

Coffee production during 1935-36 jumped to 20 million pounds from a low of 8 million pounds produced in 1934-35. This situation converted the Island from importer to exporter of coffee, but at the same time created a surplus problem. Local consumption at the time was estimated at about 15 million pounds leaving a surplus of about 5 million pounds which had to be disposed of. A federal appropriation for the disposal of this coffee surplus was obtained, from which a subsidy had to be paid on each pound of coffee exported exclusively to the continental United States for consumption in the continent. This appropriation, however, provided no help for raw coffee shipped to Europe or shipped to the United States in roasted form. This subsidy plan for the year 1935-36 did not bring the desired results due to the late date on which it was approved and lack of cooperation on the part of the growers and coffee dealers. It served, however, to give this people a working knowledge of the operation of the plan, so that in future years disposition would proceed without great hindrance.

In 1936 Act No. 17 was approved by the Legislature of Puerto

Rico authorizing the organization of the Puerto Rican Coffee Corporation to cooperate in the disposition of coffee surpluses in the Island. Coffee is being sold to-day through this agency under a Federal and Insular subsidy, which tends towards the elimination of excess coffee from the market and the stabilization of the price of coffee.

Coffee exports under this policy of subsidization increased from 592,807 pounds shipped in 1937-38 to 8,172,166 pounds exported during 1940-41. The combined Insular and Federal subsidy made it possible to stabilize the price of coffee during this year by withdrawing excess stocks from the market. Despite all results obtained the coffee industry in the Island continues to barely survive. Up to now none of the schemes put into operation have proved themselves capable of solving the poor conditions prevailing in the interior sections of the Island.

D. Actual Problems of the Coffee Industry and Solutions.

1. High Production Costs and Low Yields.

Coffee culture fitted well into the natural conditions and the social structure of the island of Puerto Rico, so long as the following conditions existed: (1) an ample supply of rich, cheap virgin soil suitable for coffee cultivation and upon which food crops could be grown, (2) a forest cover providing the "jibaro" with charcoal and construction material, (3) crop diversification, (4) tariff protection, and (5) a simple social structure not easily affected by external factors, such as occasional storms, market changes, etc. Unfortunately this situation has changed profoundly and has adversely affected all phases of coffee culture, including production costs and yields. The number of people relying upon

coffee as a principal source of income has substantially increased, soil fertility has been seriously impaired, the ample supply of timber has virtually disappeared, tariff protection has been withdrawn, and the social order has become more complex due to improved means of transportation and communication.

The cost of producing coffee in Puerto Rico is unusually high. This is due principally to the following reasons: (1) inland location of coffee farms in the mountainous area, (2) impairment of soil fertility, (3) application of traditional methods of production which in themselves are poor, (4) decline in average yield per acre, and (5) hurricanes. The location of coffee plantations in the rugged interior country not only makes agricultural operations more costly than those performed on the level ground, but also increases the cost of distributing and transporting the crop to the local markets and shipping points. Due to the topographical features of this coffee area, to the age of the coffee industry, and its traditional methods of production, soil fertility of coffee farms has decreased considerably for some time. This impaired condition prevailing in many parts of the coffee area has resulted in so small a yield per acre that the unit cost of producing coffee in Puerto Rico far exceeds that of competitive milds. The actual yield is around 125 pounds an acre as contrasted with 400 pounds and more in several of the competing countries. Cost is further increased by hurricanes. Hurricanes increase the unfavorable ratio of productive to unproductive tree capacity. They add abnormal loads to the heavy capital burdens of coffee growers, and by increasing the risk of coffee cultivation, drive up the interest rates of coffee loans. They disorganize the credit pattern, and by increasing the cost of producing

and marketing the coffee, unfavorably affect the competitive position of the Puerto Rican coffee industry.

Coffee yields are lower in Puerto Rico than in any other important coffee-growing area in the Western Hemisphere. According to the 1935 Census the yield per acre in Puerto Rican coffee producing areas was 141.8 pounds. This yield compares unfavorably with that of Costa Rica, Mexico, Guatemala, Brazil, Venezuela, and Cuba. Recent estimates place the coffee yield per acre in 450.6 pounds for Costa Rica, 442.4 pounds for Mexico, 360.8 pounds for Guatemala, 347.3 pounds for Brazil, 289.1 for Venezuela, and 166.6 pounds for Cuba. It can be seen that the yield of coffee in Puerto Rico is low, in most cases less than one-half that of other areas. This low yield results in both a low gross return and a high cost of production.

With present production costs, the Island's coffee producers have very little hope of recovering the markets which they formerly enjoyed. These costs will have to be reduced before Puerto Rico can successfully compete with other coffee-producing areas selling in European and other markets. Unfortunately too many obstacles are in the way in the form of low yield per acre, high fixed costs due to taxes and interest, high wage labor cost, and the necessity of selling in unprotected markets and buying in protected ones. If the Island's coffee yield were increased to two times or even three times the present level, high costs from other causes would still be in the way, rendering it most difficult to meet the competition of other coffee areas.

2. Markets

During the Spanish regime Puerto Rican coffee enjoyed tariff protection in Spain. Most of its production was marketed in that country and Spain depended on the Island for a substantial portion of its coffee

requirements. The shift from the Spanish to the American regime resulted in a loss of the Spanish market and, temporarily at least, of the Cuban market. After the loss of the Spanish protected market Puerto Rican coffee merchants turned their attention to the creation of other markets in other European countries. They were reasonably successful in their efforts and created a market in Italy, Austria, Germany, France, the Netherlands, Sweden, Czechoslovakia and other countries where, until World War I, coffee from Puerto Rico was held in high esteem. However, these markets were practically lost as a result of the World War and its aftermath. In the meantime Cuba had also started buying considerable quantities of Puerto Rican coffee, but, after the collapse of the sugar market during the twenties, Cuba was forced to a strong program of crop diversification. This led to the development of a rapidly growing industry which not only closed the Cuban market to Puerto Rican coffee but created competition in the export markets.

With the loss of the European markets and the Cuban market, and the slight hope of regaining them, and with the apparent difficulty of marketing Puerto Rican coffee as a high price "quality" coffee in the United States continental market, Puerto Rico is faced with a problem of marketing its coffee even now, when the industry is still feeling the shock of hurricane damage and its output is comparatively low. Such a situation apparently leaves no other alternative but to seek a main market for Puerto Rican coffee in continental United States. The fact, on the other hand, that the greatest possibility of selling coffee in the United States seems to lie in the field of blends, creates another problem which qualified experts and other competent persons have to solve. To be marketed as a blend, Puerto Rican coffee would have to compete on the basis of world competitive prices. Puerto Rican coffee would, however, be at a disadvantage in such competition,

since cost of production in the Island is considerably higher than in South and Central American countries. This means that either cost of production has to be reduced to a favorable level, or else that the Federal and Insular governments must continue their policy of subsidization, if the Island is to market its coffee at all.

3. Mortgage Debt.

In the field of coffee production, one of the most serious obstacles is the existing mortgage debt. Some indication of the situation is presented in a study of 523 coffee farms, which revealed that, while recorded mortgages were outstanding against 349 of the coffee farms studied, mortgages on these constituted 102 per cent of the estimated actual value of the farms. (1) Mortgaged coffee farms covered an area of 39,299 cuerdas, or 79 per cent of the total coffee farm area studied. These figures reflect the special severity of the problem in the coffee-producing areas. All students of the coffee industry consider the actual debt problem a constant obstacle in the way to rehabilitation of that industry, unless ameliorative steps are taken. The burden is largely an outgrowth of the hurricanes of 1928 and 1932.

4. Tariff Protection.

During the Spanish regime coffee was the premier crop of the Island and thus enjoyed a special tariff protection in the Spanish market. With the change in sovereignty which occurred in 1898 this tariff protection then disappeared and Puerto Rican coffee began to be sold in open competition with foreign milds. This change in policy which is mostly responsible for the decreasing importance of the coffee industry in Insular economy,

(1) Descartes, S.L., "La Situacion Hipotecaria Rural en Puerto Rico," Agricultural Experiment Station, Bulletin 42, January 1936, Page 21. Refers to the situation on November 1934.

is explained by the fact that the United States is the largest consumer of coffee in the World and that no coffee is produced in continental United States to supply consumption requirements. Coffee, therefore, is on the free list.

An amelioration of the critical situation prevailing in the Island's coffee industry was obtained in 1931 when Congress granted the Insular government the right to levy an import duty on coffee brought into the Island. This duty artificially raises coffee prices in Puerto Rico and acts as a sales tax, the proceeds of which are used in the policy of subsidization being actually followed by the Government in its effort to aid the industry in its recovery from the hurricanes of 1928 and 1932. This, however, constitutes no sound policy for permanent recovery of the industry.

5. Federal and Insular Aid to the Coffee Industry.

Since 1928 large sections of the coffee industry of Puerto Rico have been in a state of virtual bankruptcy. This condition has resulted largely from hurricane damage, from loss of markets, from soil depletion, antiquated methods of production and other causes to which reference has already been made. Wholesale bankruptcy of the entire industry has been averted by the assistance afforded by various agencies of the Federal and Insular governments and by Federal and Insular legislation enacted during 1928-40. The following is a list of the most important Federal and Insular measures enacted during the mentioned period: 1/

1928

Act NO. 24.....This measure declares illegal the adulteration or mixing of coffee with any other grain or substance with the intention of selling it.

1/ Taken from Zimmermann, Erich W., "Staff Report to the Interdepartmental Committee on Puerto Rico," Washington, 1940, Pages 192-198.

1928

JOINT RESOLUTION (Public Resolution-No. 74, 70th Congress)..... This measure provides Congressional aid for rehabilitation of coffee plantations in Puerto Rico following hurricane of 1928.

1930

JOINT RESOLUTION (Public Resolution-No. 33, 71st Congress)..... This measure authorizes additional appropriations for the relief of Puerto Rico granted by Public Resolution No. 74, 70th Congress.

1934

ACT NO. 7.....This Act imposes an import duty of 15 cents a pound on raw coffee and 18 cents a pound on roasted or ground coffee imported into Puerto Rico.

PUBLIC No. 411, 73d Congress..... This Act legalizes and ratifies the collection of all such taxes and duties under or by authority of JOINT RESOLUTION No. 59 of the Legislature of Puerto Rico, imposing an import duty on coffee imported into Puerto Rico.

1935

ACT NO. 3 The Commissioner of Agriculture and Commerce is directed by this Act to regulate the sale of coffee in Puerto Rico, issue licenses, prevent illegal importation of coffee and one of its main purposes is to suppress the adulteration of coffee in the Island.

JOINT RESOLUTION (Public Resolution-No. 51, 74th Congress)..... By this Joint Resolution it is declared that it was the intention of Congress in ratifying J.R. No. 59 of the Legislature of Puerto Rico that the "import duty" levied on all coffee imported into Puerto Rico included and was intended to be levied upon all coffee brought into Puerto Rico whether from a foreign country or from any state, territory, district, or possession of the United States or other place subject to its jurisdiction.

1936

ACT NO. 17..... Authorizes the Commissioner of Agriculture and Commerce to organize the Puerto Rican Coffee Corporation to be organized under the laws of Puerto Rico; to cooperate with the Department of Agriculture of the United States and with the Reconstruction Finance Corporation for the purpose of disposing of any excess of coffee there may be in Puerto Rico over the probable consumption in the Island. The Act also appropriated \$50,000 to set the program in action... ACT NO. 161 was passed and approved in 1938 to amend this Act by authorizing the Puerto Rico Coffee Corporation to continue to operate and "carry out by itself or in cooperation with any agency or organization of the Insular or Federal government, now established or hereafter organized, a plan to remove or dispose of the surplus of any coffee crop in Puerto Rico that may threaten to disorganize the structure..." ...ACT NO. 95 was approved in 1939 and by it the powers of the Corporation were enlarged.

1936

ACT NO. 116..... This Act levied a tax of 25 cents on each quintal of raw coffee sold in Puerto Rico and created a trust fund known as "Fund for the development of a Market for Puerto Rican Coffee." The Commissioner of Agriculture and Commerce was directed by this Act to prepare and carry out a publicity campaign for the introduction of Puerto Rican roasted and ground coffee in the United States market.

JOINT RESOLUTION NO. 4 This Act levied a tax of 2 per cent on the assessed valuation of each cuerda of coffee in Puerto Rico. With the tax and surcharges collected by virtue of the Act, the Treasurer of Puerto Rico established a special fund known as "Coffee Insurance and Rehabilitation Fund" which was available for expenditure, in obtaining cyclone insurance on coffee, in order to grant to cooperative associations in Puerto Rico the enjoyment of the credit facilities offered by the Federal Intermediate Credit Bank. This measure authorized the Commissioner of Agriculture and Commerce either separately or in cooperation with the Agencies extending their crop loan facilities to the coffee growers to buy such amounts of insurance as was necessary to insure the plantings, crops or credits of those coffee growers of the Island whose applications for loan either approved by the financial agencies authorized and ready to make coffee crop loan transactions in Puerto Rico. (This Joint Resolution was repealed by Act. No. 260, approved May 15, 1938.)

1937

ACT NO. 108..... This Act remits the debt of one hundred thousand dollars owed by Cafeteros de Puerto Rico to the people of Puerto Rico, which debt was contracted by virtue of the resolution of the Economy Commission of the Legislature of Puerto Rico of September 19, 1931, and was ratified by J. R. No. 23 of April 25, 1932.

1938

ACT NO. 65..... This Act provides for the appointment of a commission to make a detailed study of the coffee problem of Puerto Rico.

ACT NO. 184..... This Act ratifies J.R. 13 $\frac{1}{2}$ approved April 30, 1925 and its purpose is to protect Puerto Rican coffee from pests existing in other countries and to this end forbids the importation into Puerto Rico of any coffee plants, seeds, or beans, or bags used for coffee, from the countries where the insect STEPHANODERES COFFEE, exists, or from any other country which shall have imported coffee plants, seeds or beans coming from said countries, not including in this prohibition the roasted or ground coffee bean.

ACT NO. 255..... Fixes the minimum and maximum prices at which coffee shall be sold in Puerto Rico; imposes certain duties on coffee agriculturalists, purchasers and dealers in the Island; establishes consumption quotas for coffee farms in Puerto Rico.

1938

ACT NO. 272.....This law provides for the extension for an additional term of four years at the reduced assessed valuation of 80 per cent of the assessment of the coffee plantations as fixed by the Board of Review and Equalization for the fiscal year 1931-32 as provided for in ACT NO. 3 approved April 28, 1932. This measure is based on the policy of the people of Puerto Rico to protect the coffee wealth of the Island and to contribute to the promotion and rehabilitation of coffee plantations by stimulating production and cooperation in the development of a normal market for the crops.

1939

ACT NO. 145.....This Act levies a special tax of one and one-half cents on each pound of raw coffee sold for consumption in Puerto Rico; sets aside for the Puerto Rican Coffee Corporation a portion of the proceeds of said tax; authorizes the Treasurer of Puerto Rico to contract loans therefor; and creates a fund to be known as "Fund for the Development of a Market for Puerto Rican Coffee". This Act contemplates the supplying of the necessary funds for the Puerto Rican Coffee Corporation, created by Act No. 17 of 1936, as amended, to enter the market and promote exports of surpluses.

1940

Legislation of this year does, in the main, two things: First, it imposes heavy penalties on the violators of the marketing provisions of the existing coffee law. Coffee growers are required by law to sell 55 per cent of their production for consumption in the local market at a controlled price of $18\frac{1}{2}$ cents per pound. They are, then, at liberty to dispose of the other 45 per cent of their crop at will, for export. Formerly penalties for the violation of these provisions had been light and the enforcement of the law had been lax. By this legislation it is hoped that the 55-45 ratio will be enforced, and that the marketing of the so-called "bootleg" coffee (a process which has seriously complicated the operation of the coffee law up to the present time) will be prevented. Second, it gives the Insular Department of Agriculture a fund with which to subsidize the export of coffee. The effect of this provision and the one mentioned just above, it is hoped, is to stabilize the coffee industry.

6. Measures to Rehabilitate the Industry.

The rehabilitation of the coffee industry requires a thorough reorganization of the industry itself along lines that, if possible, could eliminate the causes largely responsible for the difficulties which are besetting it. This means that the cost of production and marketing has to be reduced by rubbing out as fully as possible the devastating effects

of hurricanes, that soil fertility has to be improved and that antiquated methods of production must disappear. It also signifies that some means must be devised to improve those conditions which are directly responsible for the low prices being paid to coffee growers: loss of markets, difficulty of selling in continental markets, etc.

Hurricane effects could be reduced by increasing the regularity of the coffee supply through the establishment of nurseries and the storage of a portion of large crops, by reorganizing the whole coffee credit structure through proper coordination of creditor claims and clearing up of the present debt conditions as speedily as possible, and by the establishment of a system of hurricane insurance. On the other hand, coffee growers should be properly educated in improved methods of cultivation and, if possible, new methods of growing and marketing coffee which have proved successful in other coffee producing areas should be introduced. Cultivation should be made intensive and lands sufficiently fertilized in order to increase the yield per cuerda and thus further reduce the cost of production. This would bring Puerto Rican coffee nearer in line with that of similar coffees being sold in the continental market of the United States. Such a plan, however, should be made a part of programs destined to improve soil conditions prevailing in the coffee zone.

The price situation, on the other hand, calls for prompt attention and cooperation on the part of the Federal government. Efforts should be made by the State Department to secure for Puerto Rican coffee growers as many market advantages as are compatible with a sound commercial policy. This would call for an elimination of the widespread dumping practices being continually carried on in the American market and for the devising

of ways in which new outlets for the Puerto Rican coffee can be created in competition with other milds. If new markets are not created for the Island's coffee, the present policy of subsidization will have to continue. This procedure in itself constitutes no means of bringing permanent recovery to the industry.

Moreover, the Insular government, in cooperation with its various agencies and institutions, should give careful consideration to the possibility of launching a vigorous campaign of crop diversification in coffee farms. Production of food crops for home consumption should also be further pushed to reduce monetary outlays.

CHAPTER VI

TOBACCOA. Development of the Tobacco Industry.1. Tobacco Situation before American Occupation.

Tobacco production in times of Spanish dominion was altogether much less important to the Island's economy than it is to-day, and was rather intimately linked to the Cuban tobacco industry. As both Cuba and Puerto Rico were Spanish possessions at the time, trade was fostered between them and with the mother country. It was natural, therefore, to find that Puerto Rican unmanufactured tobacco was mainly marketed in Cuba and Spain, though small amounts were also sold to other European countries, like Germany and France. Exports of tobacco and tobacco products to continental United States were insignificant and met the usual import duties levied by this country. In 1897 tobacco valued at \$1,194,318 was exported from the Island to the mentioned countries.

Tobacco production during the Spanish regime was as follows:

<u>Year</u>	<u>Kilos</u>	<u>Pesos</u>
1850	2,973,380	118,932.32
1860	2,557,448	95,010.77
1870	5,950,322	238,012.88
1880	12,188,517	831,035.45
1890	3,977,987	589,465.37
1897	6,255,953	1,194,318.30

The cigar industry in Cuba formerly provided for a substantial part of the Puerto Rican high-grade tobacco known to trade as "filler and wrapper." After 1897 the prohibitive duty of \$5 per pound on tobacco imported into the Island sealed the door to further business. Meanwhile the European market for cheap tobacco known locally as "boliche" had disappeared. Although the Cuban outlet was practically closed as a result of the Spanish-

American war, the continental United States markets were opened. Prior to 1898, it required practically all of the money receipts from tobacco marketed in foreign markets to settle for tobacco manufactures brought into the Island. A marked expansion of the output, manufacture, and shipment of tobacco was effected by the removal of import duties on tobacco and cigars shipped to continental markets, although several years passed before the expansion became really significant.

2. Tobacco Acreage, Production, Prices, and Exports during the Twentieth Century.

Tobacco is actually the Island's second most important crop, only exceeded by sugar cane. Its economic importance goes beyond the monetary income to growers because of the considerable number of individuals employed in its handling, which work is somewhat of a seasonal character.

Table XXIX shows the acreage, production, yield per acre, and average price of Puerto Rican tobacco for the period 1921 to 1940. According to the table, tobacco acreage reached a high level of 81,900 acres in 1927 to decrease to a low level of 10,079 acres in 1932. From 1932 on the land acreage devoted to tobacco production gradually increased up to 1938 when 63,000 acres were planted to its growing. Low prices, uncertainties caused by the Fair Labor Standards Act, and other conditions caused a considerable drop in tobacco production in 1939. The Tobacco Institute reported only 18,688 acres devoted to its production and a low output of 11,688,364 pounds.

The yield per acre does not show indication of great variability. It has seldom gone over 700 pounds and has rarely fallen below 600 pounds per acre.

Tobacco prices dropped drastically after 1926. This was due largely ^{to} increased production, but mainly to a shift in the smoking habits

of the American people from cigar to cigarette smoking, and from cigars selling for 10 cents to cigars selling for 5 cents or less. This situation culminated in a voluntary reduction in 1932 in an effort to better prices. Following the 1932 depression, production increased while prices

Table XXIX

Tobacco Acreage, Production, Yield per Acre
and Price in Puerto Rico,
1921-1940.

Crop Year	Acreage	Production (pounds)	Yield per Acre (pounds)	Ave. Price per Pound (cents)
1921	40,000	25,000,000	625.00	21.93
1922	35,000	22,500,000	642.85	24.76
1923	41,500	26,000,000	626.50	29.70
1924	40,000	25,000,000	625.00	20.50
1925	34,023	23,000,000	676.01	31.07
1926	58,000	36,000,000	620.68	39.15
1927	81,900	50,000,000	610.50	22.00
1928	40,345	27,000,000	669.22	25.00
1929	39,075	28,000,000	716.57	23.00
1930	43,312	32,500,000	750.36	28.00
1931	50,000	37,300,000	746.00	20.00
1932	10,079	6,000,000	595.29	15.00
1933	25,300	16,783,000	663.35	15.00
1934	45,500	25,000,000	549.45	17.00
1935	38,000	22,500,000	592.10	20.00
1936	43,809	26,000,000	593.48	12.00
1937	50,000	34,983,117	699.66	14.00
1938	63,000	44,069,272	699.51	11.00
1939	18,688	11,688,384	625.44	18.00
1940	33,262	18,369,848	552.27	14.00

Source: Department of Agriculture and Commerce (Government of Puerto Rico), "Annual Book on Statistics, 1939-40."

continued to decrease, until in 1938, the lowest mark ever recorded was reached. That situation menaced with collapse and led to a voluntary cut-out for the following crop year, with a favorable result on both stocks and prices. Prices received by farmers went up from an average of 11 cents received in 1938 to 18 cents received in 1939. The price drop in 1940 was due to increased production. This drop was, however,

small due to the fact that stocks during the preceding two years had been used faster than they were replaced.

Exportation of unmanufactured tobacco has increased considerably since American occupation of the Island (see Table XXX). Measured in equivalent farm-sales weight, the most intensive movement occurred during 1926

Table XXX

Exportation of Unmanufactured Tobacco from Puerto Rico,
Fiscal Years 1920-21 to 1939-40.

	To United States		Total		Average
	1,000	1,000	1,000	1,000	Value
	Pounds	Dollars	Pounds	Dollars	Per Pound
					(cents)
1920-21	14,564	13,553	14,688	13,568	92.5
1921-22	22,370	8,994	22,453	9,003	40.1
1922-23	19,574	9,459	19,589	9,462	48.3
1923-24	23,298	13,170	23,409	13,191	56.4
1924-25	22,721	9,837	22,958	9,870	43.0
1925-26	24,521	13,945	24,521	13,945	56.9
1926-27	30,730	20,580	30,782	20,587	66.9
1927-28	35,677	17,062	35,805	17,075	57.0
1928-29	27,469	12,959	27,497	12,963	47.0
1929-30	26,014	11,914	26,038	11,917	45.8
1930-31	25,180	13,165	25,192	13,167	52.3
1931-32	17,035	6,714	17,101	6,715	39.3
1932-33	12,928	4,403	12,931	4,404	34.1
1933-34	18,846	6,329	18,870	6,333	33.6
1934-35	19,974	7,146	19,985	7,148	35.8
1935-36	23,157	9,254	23,261	9,254	39.8
1936-37	23,580	9,135	23,581	9,135	38.7
1937-38	20,699	8,239	20,699	8,239	39.8
1938-39	23,208	7,399	24,895	7,554	30.3
1939-40	17,787	6,029	17,087	6,029	35.3

Source: Department of Agriculture and Commerce, Monthly Summaries of Foreign Commerce of the United States and annual reports, customhouse.

when the total exports were 30,782,000 pounds. All but 52,000 pounds of this was exported to the States and the farm-sales weight equivalent of these shipments was 43,243,000 pounds (see Table XXXI). Exports declined

during the succeeding years until 1932 when the lowest export record was reached and only 12,931,000 pounds were shipped. Shipments for 1940 represented a reported weight of only 17,087,426 pounds, all of which went to continental United States. This is the lowest figure ever recorded since 1932.

Table XXXI

Exports of Unmanufactured Tobacco from Puerto Rico to continental United States, classified as to form and the farm-sales weight equivalent 1923 to 1936.

Year	Leaf				Stems, Trim- mings and				Total	Farm-sales weight equivalent
19--	Unstemmed		Stemmed		Scraps					
	1,000	Per	1,000	Per	1,000	Per	1,000	Per	1,000	
	Pounds	Cent	Pounds	Cent	Pounds	Cent	Pounds	Cent	Pounds	
1923	992	4.2	18,842	80.9	3,464	14.9	23,298	100.0	34,436	
1924	4,718	20.8	13,048	57.4	4,955	21.8	22,721	100.0	32,376	
1925	4,178	17.0	16,335	66.6	4,008	16.4	24,521	100.0	35,235	
1926	7,515	24.4	18,460	60.1	4,755	15.5	30,730	100.0	43,423	
1927	6,591	22.1	20,063	67.3	3,153	10.6	29,807	100.0	42,344	
1928	1,704	6.2	17,610	64.3	8,096	29.5	27,410	100.0	40,340	
1929	2,508	9.7	16,420	63.1	7,086	27.2	26,014	100.0	37,999	
1930	351	1.4	19,567	77.7	5,262	20.9	25,180	100.0	37,450	
1931	99	.6	11,684	69.6	5,072	29.8	17,035	100.0	25,381	
1932	1	(1)	9,038	69.9	3,889	30.1	12,928	100.0	19,285	
1933	48	.3	14,039	74.5	4,759	25.2	18,846	100.0	28,098	
1934	122	.6	16,523	82.7	3,329	16.7	19,974	100.0	29,758	
1935	83	.4	18,533	80.0	4,541	19.6	23,157	100.0	34,517	
1936	80	.3	18,885	80.1	4,616	19.6	23,581	100.0	35,151	

(1) Less than 0.05 per cent.

Source: Gage, Charles E., "The Tobacco Industry in Puerto Rico," United States Department of Agriculture, Circular No. 519, Washington, March 1939.

Shipments from Puerto Rico to continental United States went up from 557,000 pounds at the beginning of the century to a peak movement of 30,730,000 pounds in the year 1926. These facts clearly show the gains made by Puerto Rican tobacco in the American protected markets. Changed

conditions, however, have brought about a different picture in recent years. No shipments were made in 1939-40 to foreign countries, whereas only 17,087,426 pounds of tobacco were shipped to the Mainland.

3. Factors that have Affected Adversely the Tobacco Industry.

Almost all tobacco produced in the Island is sold in the tariff-protected market of the continental United States, where it is used as cigar filler. The existence of a ready market and a relatively high price in continental United States made possible the rapid growth of the Puerto Rican tobacco industry, which enjoyed its most prosperous years during the twenties. Recent years, unfortunately, have brought about changed conditions that have adversely affected the tobacco industry of the Island. The principal adverse factors have been: (1) the introduction of machines in tobacco manufacture; (2) the shift of the consumers' taste from cigar to cigarettes and their choice for bright tobacco; (3) the trend toward extinction of the Island's dark tobacco cigarette industry; (4) low prices for tobacco due to decreased demand for medium and high-priced cigars; (5) deficiency in marketing and credit facilities, despite some show of betterment.

So long as hand labor was an important cost item in cigar making, Puerto Rico, because of a considerable wage differential, enjoyed definite, discernible advantages in the field over sections of the Mainland. Unfortunately, union activities tending towards better wage bargainings and the introduction of cigar-making machines encouraged by higher wages, caused a substantial reduction in the wage differential which up to then was enjoyed by the tobacco manufacturers in the Island. The introduction of the machine process of cigar manufacture reduced the cost of production and resulted in low prices that further helped to depress the industry. As a result of these conditions, as well as for other reasons, the cigar manufacture

industry in the Island has lost ground, shipments to the Mainland having declined from 214,546,000 cigars in the fiscal year 1925-26 to the figure of 1,355,000 in 1939-40.

The shift of the consumers' taste from cigar to cigarettes constitutes also an underlying cause in the decadence of the tobacco industry in Puerto Rico. The change in the smoking habits of the people of the United States, coupled with the drastic shift taking place in demand from cigars selling for 10 cents and more to cigars retailing at 5 cents and less, has caused a general curtailment of cigar consumption. As a result of this trend, Puerto Rican tobacco, which used to sell at high prices, has lost some of its price advantages and is forced to maintain itself in a more competitive market on a lower price level. Shipments to the Mainland have dropped sharply, therefore, not only because of the shift in cigar consumption but also because of the inability of the Puerto Rican manufacturers to sell their product at remunerative prices in the continental markets.

To the above, it should be added that the Puerto Ricans' ever-increasing preference for bright tobacco cigarettes manufactured in the Mainland, has very adversely affected local production of dark tobacco cigarettes. The trend appears to be toward complete extinction despite the 20 per cent increase in the consumption of such cigarettes for the fiscal year ending in 1940 over the period 1938-39.

B. Tobacco Importance in Insular Economy.

1. Tobacco Zones and Types Produced.

Tobacco produced in the Island falls into three main categories, related to physiographic and climatic factors: the filler or interior type, the coastal type, and the semi-coastal type.

The filler or interior type constitutes about 95 per cent of the total production of tobacco in Puerto Rico. It is grown in the valleys and on the mountain slopes of the interior of the Island. Variations that distinguish the tobacco proceeding from different interior sections result from soil, slope, altitude, and exposure conditions and differences in cultural and curing methods. Although all of this tobacco is classified as cigar filler, variations in it are reflected in prices received by the farmers.

"The most extensive soils used for the production of tobacco in the filler district are those of the uplands derived from tuffaceous rock, which includes the eastern and western parts of the district. Of the soils developed from the weathering of tuffaceous rock, those of the Mucara series predominate. They are brown, fairly granular, friable, neutral or slightly acid, well drained, and fairly heavy in texture. These soils are shallow, the depth depending on the slope---the steeper the slope the shallower the soils. In many fields only 3 or 4 inches of soil covers the parent rock. The Mucara soils are fairly high in bases such as calcium and magnesium, and generally fertile. Crop yields depend mostly upon the slope, the extent of sheet erosion, and the length of continuous cultivation without the use of fertilizer." (1)

The filler-type-tobacco-producing district extends from west to east accross the Island and comprises the municipalities of Utuado, Jayuya, Ciales, Morovis, Orocovis, Barranquitas, Corozal, Toa Alta, Naranjito, Aguas Buenas, Aibonito, Comerio, Cidra, Cayey, Caguas, San Lorenzo, Gurabo, Juncos and Las Piedras.

The coastal type of tobacco is rather short and heavy-bodied. It is grown on the coastal plain around the northwestern part of the Island comprising the municipal areas of Isabela, Aguadilla, Quebradillas and Camuy, and the southwestern municipalities of San German, Lajas, Sabana Grande and

(1) U.S. Department of Agriculture, Circular No. 519, March 1939, "The Tobacco Industry in Puerto Rico," by Charles E. Gage, Page 17.

Yauco. A small quantity is also produced along the north coast and in southern sections near Juana Diaz, Guayama, and Yabucoa. Due partly to absence of seed selection and to deficient cultural methods the varieties have fallen off a great deal and are frequently mixed in the field. The first crop is too often coarse and ill-adapted for cigar-filler purposes although perfectly suitable for the production of roll chewing tobacco. The second crop is thinner and is generally used as scrap in the manufacture of cigars and cigarettes.

Semicoastal tobacco is grown near the coastal plain around the vicinities of Barceloneta, Manati, Vega Alta, Bayamon, Carolina, Loiza and Trujillo Alto in the north part of the Island, and in the low valleys around Coamo, the southern portion of Cayey and Humacao. This type of tobacco is intermediate between the coastal chewing type and the interior smoking type, but the trade generally gives it the same treatment as the filler type.

2. Volume of Employment and Average Hourly Earnings.

Both the agricultural and the processing phases of the Puerto Rican tobacco industry require a considerable number of laborers. It has been estimated that about 15 per cent of the total working population of the Island is dependent on income received from the processing and production of tobacco. (1) It has also been estimated that about 66.4 per cent of its gross income is distributed in the form of payrolls. Under average conditions, tobacco farms provide the main basis of employment for about 38,000 gainful workers (38,186 in 1935), including farm operators. The

(1) U.S. Department of Labor, Wage and Hours Division, "Puerto Rico: The Leaf Tobacco Industry," April 1941, Page 5.

leaf tobacco industry, according to estimates made by the Insular Department of Labor, provides employment for about 16,000 workers. Hand stemming, almost all of which is done by female workers, is estimated to account for about 80 per cent of the total employment in the industry. Employment in factories is supposed to fluctuate between 200 and 400 workers per establishment. This refers mainly to medium-sized factories, since in other establishments, employment may vary from 40 to even 850 workers.

Average hourly earnings in the whole tobacco industry are very low. According to the Insular Department of Agriculture and Commerce, 890 workers in tobacco farms surveyed for statistical purposes in 1939-40, made an average hourly earning of only 6.2 cents. A study made in 1940 by the Insular Department of Labor, based on a sample covering 45 leaf tobacco establishments, shows that 85.02 per cent of all employed derived hourly earnings ranging between 12 and 13 cents per hour. About .85 per cent of the workers earned more than 21 cents, while 3.55 per cent received less than 10 cents (see Table XXXII). The average hourly earnings for all employed was 12.4 cents per hour; males received 13.3 cents while female workers received 12.3 cents on the average.

Another study made in 1942 by the statistical division of the Insular Minimum-Wage Board, shows that in tobacco fermentation operations the average earning was 12 cents per hour, and that 25 per cent of the female workers employed received a daily wage of less than \$1 in violation of the Insular Minimum-Wage law. (1) About 88 per cent of the total workers employed received also a daily wage of \$1 or less. The same study shows that before the application of the provisions of the Fair Labor

(1) "La Industria del Tabaco en Rama," Junta de Salario Minimo, Division de Estadisticas, San Juan, Mayo 1942.

Act
Standards to stemming operations the worker used to derive an average earning of 12.9 cents per hour. Since January 5, 1942, most of the workers in these operations are receiving more than 20 cents per hour, which is the minimum wage to be paid as set by the Act.

Table XXXII

Simple and Cumulative Percentage Distribution of
Workers in the Leaf-Tobacco Industry,
by Average Hourly Earnings:----- 1940.

Average Hourly Earnings	: Simple Percentage	: Cumulative Percentage
<u>Cents per Hour</u>	:	:
4 but less than 5	: 0.08	: .08
5 but less than 6	: 0.54	: .62
6 but less than 7	: 1.39	: 2.01
7 but less than 8	: 0.93	: 2.94
8 but less than 9	: 0.61	: 3.55
9 but less than 10	: 1.17	: 4.72
10 but less than 11	: 1.31	: 6.03
11 but less than 12	: 0.33	: 6.36
12 but less than 13	: 85.02	: 91.38
13 but less than 14	: 4.35	: 95.73
14 but less than 15	: 1.15	: 96.88
15 but less than 16	: 1.12	: 98.00
16 but less than 17	: 0.39	: 98.39
17 but less than 18	: 0.17	: 98.56
18 but less than 19	: 0.20	: 98.76
19 but less than 20	: 0.02	: 98.78
20 but less than 21	: 0.37	: 99.15
21 but less than 22	: 0.03	: 99.18
22 but less than 23	: 0.01	: 99.19
23 but less than 24	: ----	: ----
24 but less than 25	: 0.04	: 99.23
25 but less than 26	: 0.55	: 99.78
26 but less than 27	: 0.01	: 99.79
27 but less than 28	: ----	: ----
28 but less than 29	: 0.01	: 99.80
29 but less than 30	: 0.04	: 99.84
30 but less than 31	: ----	: ----
31 but less than 32	: 0.08	: 99.92
41 but less than 42	: 0.08	: 100.00
	:	:
Total	100.00	100.00

Source: Insular Department of Labor.

3. Number, Acreage, and Size of Tobacco Farms.

According to the 1935 Census, 13,016 farms were recorded in tobacco production and covered a total land area of 252,225 cuerdas, and a cropland extension of 105,494 cuerdas. Only 85,019 cuerdas were harvested in tobacco, while 20,475 cuerdas remained idle, 99,041 in pasture, and the rest in other lands. Statistics compiled by the Insular Department of Commerce and Agriculture, however, show a tobacco acreage of only 38,000 acres for 1935 (see Table XXIX).

According to statistics compiled by the A.A.A. for the 1938-39 season the distribution of tobacco farms by size was as follows: 65 per cent consisted of one acre or less, 26 per cent were from one to three acres, 8 per cent between 3 and 15, and one per cent 15 acres or more. This means that out of the 21,339 farmers reported under contract with the A.A.A. for this crop year, 91 per cent cultivated less than 3 cuerdas of tobacco, and 99.4 per cent less than 20. It can thus be seen that the typical tobacco farms are small, at least smaller, than those found in any other commercial crops.

4. Supplementary Production in Tobacco-Growing.

A study made by the Division of Agricultural Economics, University of Puerto Rico, of 194 small tobacco farms in 1935-36, illustrates the importance of subsistence farming in tobacco production. (1) The 194 farms surveyed had 85 per cent of the land in crops, or to be exact, 2,003 cuerdas. Cuerdas double cropped and intercropped amounted to 724 cuerdas showing the extent of these practices. More than 25 per cent of the total crop area was devoted to tobacco growing and yielded in the

(1) "A Farm Management Study of 194 Small Tobacco Farms in Three Municipalities of Puerto Rico, 1935-36," Division of Agricultural Economics, University of Puerto Rico, Mimeograph Report No. 5.

average about 8 quintals per cuerda. Corn and dry beans occupying a secondary position, and generally grown on the same land where tobacco is harvested, occupied an area covering 18.3 per cent and 11.6 per cent respectively of the total area in crops, and yielded 5 quintals and 2.5 quintals per cuerda. Bananas and sweet potatoes absorbed almost the same percentage of the total cropland as dry beans, while rice required only 5.6 per cent of the total cuerdas cultivated. Other crops of lesser importance including yautias, dasheens, root celery, oranges, and cabbage, were also cultivated. Their area of cultivation amounted to 5.4 per cent of the total area in crops.

Total crop sales in the 194 small tobacco farms averaged \$312 per farm, out of which \$284, or 90.8 per cent belonged to tobacco. Bananas provided 2 per cent of the total receipts; coffee, 1.5 per cent; cabbage, 1.4 per cent; dry beans, 1.1 per cent; and sweet potatoes, corn, root celery and other crops combined, 3.1 per cent.

C. Tobacco Farm Organization.

1. Capital Investment and Yield of Tobacco Farms.

Capital investment and yield of tobacco farms are taken up in detail in an economic study made for 1936-37 of 270 tobacco farms by Colon Torres, Assistant Economist of the Division of Agricultural Economics, University of Puerto Rico. (1) According to the survey, the average capital invested in the 270 tobacco farms amounted to \$4,630 per farm or about \$73 per cuerda. The value of the real estate represented

(1) Colon Torres, E., "Estudio Economico de 270 Fincas de Tabaco en Puerto Rico, 1936-37," Boletin 50, Division de Economia Agricola, Universidad de Puerto Rico, 1939.

90 per cent of the total investment. The value of the land was \$3,400 per farm, or \$54 per cuerda, constituting 82 per cent of the total real estate value, while that of the average tobacco curing barn was \$324 per farm.

Another study made under the auspices of the same division, for smaller farms, for the year 1935-36, provides a good basis of comparison between the small farm and the large farm. (1) The 194 small tobacco farms studied during the mentioned survey had an average area of 14.4 cuerdas of which 6.6 cuerdas, or 46 per cent were not in crops, whereas the average area of the 270 farms surveyed during 1936-37 was of 63 cuerdas per farm, of which only 36 per cent were not in crop. In the 194 small farms the capital invested per farm amounted to \$859 as contrasted to \$4,630 for the larger farms, representing a capital investment of \$60 per cuerda for the smaller farms against \$73 for the larger ones. Land alone constituted 69 per cent of the total farm capital invested in the 194 small farms, against 72 per cent for the larger farms. The value of tobacco curing barns, as estimated by farmers, averaged \$65 per farm and amounted to 8 per cent of the entire capital invested in the smaller farms, but only 7 per cent of the capital invested in the larger size group.

The average yield per acre of tobacco is surprisingly low in the Island. Though diseases and insect pests are partly responsible for this fact, the low yield is principally due to the relatively small size of the leaves, which in turn may be partly explained by the depleted condition of the soil. Most of the tobacco in Puerto Rico is grown on the mountain slopes,

(1) Serralles, J.J., Colon Torres, E., and Julia, F.J., "A Farm Management Study of 194 Small Tobacco Farms in Three Municipalities of Puerto Rico, 1935-36," Mimeograph Report No. 5, Division of Agricultural Economics, University of Puerto Rico.

some of which are excessively steep. Tobacco culture under these conditions encourages both leaching and erosion, so, the finer particles of soil have been washed out, leaving a coarse granular soil deficient in humus and natural fertility. Soils on the steep slopes are, therefore, extremely shallow and neither the size of the leaf nor the yield per acre is as large as on the most fertile and deeper soils of the valleys and gentler mountain slopes. These effects are more marked in cases where growers harvest two tobacco crops during the same year, and when no crop rotation practice is done.

Table XXXIII

Crop Yields in Tobacco Farms

Crop	:	:	No. of Cuerdas	Harvested	:	Avg. Yield per Cuerva			
	:	:	194	:	194	:			
	Unit:	:	Small	:	Small	:	270		
	:	:	Tobacco	:	Tobacco	:	Tobacco	:	Tobacco
	:	:	Farms	:	Farms	:	Farms	:	Farms
Tobacco	:	qq. :	530.49	:	2,669.70	:	7.9	:	6.9
Corn	:	qq. :	367.62	:	1,916.00	:	5.0	:	6.23
Beans	:	qq. :	231.55	:	684.94	:	2.5	:	2.2
Bananas	:	1,000:	216.55	:	493.29	:	15.7	:	15.8
Sweet Potatoes	:	qq. :	220.35	:	515.28	:	38.8	:	26.5
Rice	:	qq. :	115.95	:	582.85	:	3.0	:	7.3

Source: Toro, Emilio del, "Brief Facts on Tobacco Farming in Puerto Rico, in 1935-36 and 1936-37," Mimeograph Report No. 11, Division of Agricultural Economics, University of Puerto Rico, 1938.

A comparison of the yield of tobacco on the basis of the two surveys already referred to, shows that in 1935-36, the 194 small tobacco farms averaged 7.9 quintals per cuerda, whereas in 1936-37, the average was 6.9 quintals for the 270 large farms studied that year (see Table XXXIII). Unfavorable weather conditions in 1937 apparently constitutes the reason for the low yield in that year.

Yields for the minor crops planted in the tobacco farms referred

to did not show any substantial difference, except rice and sweet potatoes. The yield for corn, beans, and bananas was more or less the same for both types of farms. The yield for sweet potatoes, however, averaged 38.8 quintals per cuerda in the 194 small tobacco farms, against 26.7 for those studied in 1937, while that of rice was of only 3.0 quintals in 1936 as compared to 7.3 quintals per cuerda in 1937. The difference in rice yield is probably explained by the consistently higher yields of this crop in certain municipalities which were not surveyed in 1936, but were included among those studied in 1937.

2. Cost of Production.

Cost of production statistics are very difficult to obtain for tobacco. Several studies, however, have been made, an analysis of which may carry the reader to a more or less clear vision of actual costs of production in the industry. Among these studies is one made in 1940 of the cost of production of tobacco in Puerto Rico for the year 1937-38. Cost information was compiled for 66 plantings cultivated by farm operators who paid all production expenses and received all the income. Page 27 of this study reads:

"Information on costs of two types of tobacco seed-beds was taken, namely, seedbeds made under shade and open seedbeds. Total costs per cuerda of seedbeds under shade averaged \$384.47. Net costs, that is, costs after allowing for income from the sale of plants, averaged \$333.30. A total of 824,785 plants was produced per cuerda, with an average cost of 47 cents per thousand plants. Labor accounted for 68 per cent of total expenses and materials used for 26 per cent. Total costs per cuerda of open field seedbeds averaged \$216.54. Net costs averaged \$166.83. Yield of plants was 469,076. Cost per 1,000 plants averaged 38 cents. Labor costs accounted for 71 per cent of total expenses, and materials used for 23 per cent. Financial returns relative to costs were higher for open field than for under shade seedbeds.

"Total costs per cuerda of tobacco grown averaged \$116.05, or \$12.95 per quintal of barn dried tobacco. Net costs per hundredweight, that is, total costs minus value of by-products, were \$12.90. Labor, of which \$64.44 were spent per cuerda, constituted the main item of expense. It accounted for nearly 56 per cent of total expenses incurred. The average expense of labor averaged \$30.86 per cuerda. A total of 556 hours were employed per cuerda, or 62 hours per hundredweight produced. The amount of labor required for harvesting and drying per hundredweight averaged 37 hours, for which an average of \$2.20 was spent. Fertilizer, which was the second most important item of expense, accounted for 13 per cent of the expense." (1)

The studies of 194 small tobacco farms in 1935-36 and 270 larger tobacco farms in 1936-37, to which reference has already been made, shows a good comparison between farm expenses in small and in large tobacco farms. Labor expense was the largest single item in both groups and averaged \$49 per cuerda for the 1936-37 tobacco farms and only \$27 for the smaller-sized group surveyed in 1935-36. Day labor averaged \$42.70 per cuerda in tobacco in the larger farms, against \$25.50 in the smaller ones. The total expense of fertilizer per cuerda in tobacco was \$19.60 for the 270 farms and \$13.60 for the 194 small farms. Taxes, insecticides, livestock feed and twine constituted 13.4 per cent of the total average expenses per farm in 1935-36 and 12.1 per cent of the average expenses in 1936-37.

3. Marketing Structure.

Tobacco in Puerto Rico is marketed through various agencies, among which are identified (1) refaccionistas, (2) local dealers, (3) brokers, leaf dealers, and manufacturers, and (4) cooperative associations. An analysis of the functions of these several agencies is pertinent to a thorough understanding of the marketing methods used in connection with tobacco.

(1) Huyke, R. and Colon Torres, R., "Cost of Production of Tobacco in Puerto Rico, 1937-38", Bulletin 56, Division of Agricultural Economics, University of Puerto Rico, 1940.

The refaccionista is generally a tobacco grower or a merchant dealing in food, feed, and fertilizers, who supplies under agreement money and credit to farmers for financing their tobacco cultivation, and to whom the laws give a lien on the crop until his claims are settled. In protection of their liens this type of crop financier exercises supervision over the spending of the money loaned to the grower and over the production of tobacco so as to make sure the crop is properly being taken care of. He also takes delivery of the tobacco from the grower, classifies it, makes proper deduction for shrinkage losses, bulks and ferments it, and finally buys it or facilitates its sale to other parties. Following such disposition, payment is made to the farmer, the debits including credit advanced in the form of money or fertilizers, insecticides and other materials needed, warehouse and transportation charges, shrinkage losses, and costs of fermentation.

As can be seen by the following quotation, the refaccionistas' operations are far from uniform:

"He may buy it from the grower, either as a speculative venture or in fulfillment of a contract entered into between himself and a local dealer. That is to say, before the planting season a leaf dealer from the States may place an order with a local dealer at some interior point in Puerto Rico to refaccion a certain acreage or poundage of tobacco. To accomplish this the leaf dealer supplies the cash at intervals during the planting, growing, and harvesting season. The arrangement is designed to insure that the leaf dealer will get the quantity of tobacco desired. The local dealer in turn makes his own terms with refaccionistas. The production credit in this case is based on the remittances of cash from the leaf dealer. The local dealer may receive a commission, but may derive additional benefits depending on his ability to refaccion the tobacco at costs which will leave him a margin of profit from the prices ultimately paid by the leaf dealer. Similarly, the refaccionista may buy the tobacco from the grower at a price that will enable him to make delivery to the local dealer at a profit. In this case the refaccionista's profits come from interest on the credit advanced, from profits on the merchandise sold under such credit, and from the margin between the price paid to the grower and that received from the dealer.

"Not all of the refaccionistas' operations fall within the above category. Many, relying on their own sources of financial backing, refaccion tobacco on a straight production loan basis, ferment the crop, and make it possible for the buyers to inspect the tobacco. Upon the sale they may take a contract from the purchaser for stripping the tobacco, that is, removing the midrib. Virtually all tobacco is stripped before the final stage of fermentation." (1)

Local dealers are individuals dealing in tobacco who are located in the interior part of the Island, and who act as commissioned intermediaries between leaf dealers and refaccionistas most of the time, but who often, instead of dealing through others, refaccion tobacco themselves and buy it from farmers who are not bound by any refaccion tobacco contracts for obtaining credit. They have their own warehouses in which to receive, classify, and store tobacco, expose it for the inspection of prospective buyers, strip, and pack it for shipment. Like refaccionistas, they take delivery of cured tobacco direct from the farmers but generally it is by direct purchase, whereas in the refaccionista's case the farmer as a rule does not lose title to the tobacco until it has been fermented and sold to some outside party. Occasionally, they too refaccion crops or receive unrefaccioned tobacco which they ferment and sell to interested buyers. They maintain direct connection with leaf dealers and a large percentage of their business is transacted with company buyers established in the Island or coming there for the marketing season.

Cigar manufacturers in the States are the greatest buyers of the Puerto Rican tobacco. Some of these manufacturers maintain plants in the interior of the Island that are equipped to take in tobacco in large amounts and in all stages and to put it through any necessary classification

(1) Gage, Charles E., "The Tobacco Industry in Puerto Rico", U.S. Dept. of Agriculture, Circular No. 159, Washington, 1939, Page 29.

or process, and to store it for later shipment to the States. Other manufacturers do not maintain leaf-handling facilities in the Island but have one or more buyers there to take care of their business. Still others buy their supplies as needed from leaf dealers because their use of the Puerto Rican tobacco does not justify maintaining buying or storing organizations, or even carrying yearly supplies.

Leaf dealers are supply merchants, located mostly in New York, who buy and store Puerto Rican tobacco in large quantities. Some of them maintain branch receiving and handling facilities on the Island, but most of them make it a practice to send representatives there during the marketing season. They regularly purchase tobacco for later sale to cigar manufacturers who do not have Puerto Rican leaf departments.

Both the dealers and the manufacturers who have representatives but not branch receiving and handling facilities on the Island transact a considerable part of their business through brokers. It is customary for the representatives to bargain with the local dealers, refaccionistas, and often individual farmers on questions of price for stipulated grades. It is the obligation of the broker to make sure that the grades are maintained, receive the packed tobacco, settle for it, and ship the tobacco to his principal. The broker's functions, therefore, are those of buying and shipping agent.

A considerable part of the Puerto Rican tobacco is marketed through cooperative organizations. The most important of these organizations is the Puerto Rico Tobacco Marketing Association to which about one-third of the tobacco growers belong. The association has large and well-equipped plants for fermentation, stripping, and packing at Aibonito, Cayey, Caguas, Ciales, Comerio, Utuado, and San Lorenzo. It constitutes

one of the few sources of credit available to tobacco growers who are members, and handles a large percentage of the tobacco produced. During the 1936-37 season it handled about 32 per cent of the total production.

4. Credit Facilities Available to Tobacco Growers.

One of the most serious problems facing the tobacco growers is the lack of a good system of refaccion credit well-adapted to the peculiar conditions surrounding farm tobacco organization. The fact that a great number of the growers do not follow a steady policy in their intent to secure production credit constitutes ample evidence of the weakness of the actual credit mechanism and absence of steadiness in the agencies purveying refaccion credit. The cooperative movement has also failed to make adequate provision of funds for production and marketing purposes. A lack of knowledge of the fundamental principles governing cooperativism, inequalities in the economic and social environment, and the prevalence of the refaccion system based on liens, have been the most important factors in accounting for this failure of the cooperative movement to be of any service to farmers.

The most important sources of production credit in tobacco farming are the "refaccionistas", the Emergency Crop and Feed Loan Office, the Production Credit Association, and commercial banks. It must be considered, however, that small tobacco growers who are not members of the Puerto Rico Tobacco Marketing Association have no source of production credit other than the refaccionistas. Eighty per cent of the tobacco growers operate farms of such small size, have such limited capital resources, and have such a low social, educational, and economic status that they are considered bad credit risks. Thus, sources which otherwise are available to large tobacco growers are to a certain measure closed

to small farmers who realize that the only way to avail themselves of the needed production credit is to recur to private lenders.

A very small number of tobacco growers have secured production credit from the Production Credit Association and the Emergency Crop and Feed Loan Office. This has been due to the fact that the loans requested have been of such small size and the collateral offered to guarantee such loans so inadequate, that the Production Credit Association has been able to approve but a small proportion of the applications made to it. Legal expenses, necessary inspection of the borrower's planting, and accounting expenses are so high when connected to small-sized farms that the Production Credit Association frequently has been forced to reduce considerably the number of loans granted.

Applications disapproved by the Production Credit Association are usually referred to the Emergency Crop and Feed Loan Office. Thus a very large number of growers that are considered bad risks, or whose applications are for very small amounts, are able to use to advantage this latter source. Many feel, however, that this agency is laboring under handicaps that do not permit it to function smoothly and in accordance with the needs of the small growers. The application of American standards to the loaning policy of the agency is the main cause of the deficiency. It is also felt that when this emergency office ceases doing business in the Island practically all of the small farmers which are now availing themselves of this source must again borrow from merchants, who buy their crops.

The foregoing discussion makes it clear that the refaccionistas are in a very privileged position. Large numbers of farmers in Puerto Rico are already dependent on this type of crop financier, and additional

small farmers will be made dependent upon them if and when the Emergency Crop and Feed Loan Office ceases to function. This means, that either public agencies must gradually replace the private lenders as a source of credit, or, that a form of production credit must be created for small tobacco growers who are not members of the cooperative marketing association. Upon the effective solution of this credit problem depends in part the betterment of the present marketing set-up and the improvement in the social and economic status of large numbers of tobacco growers.

D. Problems of the Tobacco Industry.

1. Puerto Rican Tobacco and the American market.

The States constitute practically the only market for the Puerto Rican tobacco. Prior to the decline in the prices of cigars it was used in the manufacture of Class C cigars. Due to its fine aroma and excellent texture it was rarely used in low-priced cigars. Actually, probably more than 80 per cent of the tobacco exported from the Island to the States is used in cigars retailing at not more than 5 cents. It has been estimated that about 30 per cent of these cigars contain Puerto Rican filler as do about 40 per cent of all full-sized 5 cents cigars.

There is some question as to whether the Puerto Rican tobacco is competitive with the States filler types. It has been frequently stated that such is not the case, that there is no possibility of substitution if the manufacturers are going to keep within formulas that limit their choices of filler types and their desire to make selection relative to prices and availability of other types of filler. On the other hand, the opinion has also been stated that in the American market there are several domestic varieties which directly compete with Puerto Rican varieties.

Puerto Rican tobacco is good for blending purposes. The fact that it is almost neutral in flavor has made it desirable for use with rich Havana filler, and in a mixture of mainland and Havana filler. In the latter case it has served to diminish the strong flavor of the mainland tobacco and to give the Havana filler an opportunity to make itself noticeable. It is also worthy of mention the fact that according to the growers of Connecticut Valley shade grown wrapper tobacco, the use of Connecticut shade wrapper is linked with the use of Havana or Puerto Rican filler. It was expressed that these are the only filler types with which the flavor of the shade wrapper has been successfully combined.

2. Tariff Protection.

Tobacco growing in Puerto Rico, as in all other domestic areas, is protected by the United States tariff. Such protection has made it possible to sell the Puerto Rican tobacco in the American market in competition with other countries supplying it that enjoy better natural conditions and a higher degree of technical superiority in contrast to the Island. Puerto Rican tobacco competes only indirectly with Cuban tobacco due to differences in quality, but it competes with certain varieties and qualities produced in Pennsylvania and Ohio. If the Island was excluded from tariff protection and forced to pay the levies imposed on tobacco shipped to the States it would find itself in a position in which it could hardly supply the actual demand in the market. On the other hand, the Island could hardly sell in foreign markets where it would have to enter in competition with inferior types for which a demand exists in them. Prices paid would be so low in contrast to those being actually received in protected markets that cost of production could not^{be} covered. This means, therefore, that the protected markets in the mainland are essential to the

tobacco industry in Puerto Rico.

Table XXXIV shows the tariff rates applicable to cigar leaf, scrap tobacco, and cigars imported for consumption in the States, under Act of 1930 and under the Cuban agreement effective January 5, 1942.

Table XXXIV

Leaf tobacco and cigars: Rates of Duty Applicable to Cigar-filler leaf, Scrap Tobacco, and Cigars Imported For Consumption in the United States, under Act of 1930 and under Present Trade Agreement.

	: Act of 1930	: Cuban Trade Agreement ^{1/}
Cigar-filler leaf	:	:
Unstemmed	: 28 cents per pound	: 14 cents per pound
Stemmed	: 40 cents per pound	: 20 cents per pound
Scrap Tobacco	: 28 cents per pound	: 14 cents per pound
Cigars	: \$3.60 per pound $\neq$ 20% ad	: \$1.80 per pound $\neq$ 12%
	: valorem	: ad valorem
	:	:

Source: U.S. Tariff Commission, Tobacco and Tobacco Manufactures and Reciprocal Trade Agreements (1940).

^{1/} Effective January 5, 1942; applicable to imports from Cuba only. If imports from Cuba should exceed an annual quota of 22,000,000 pounds, the excess would be dutiable at the 1930 rates less 20% preferential.

Almost all the cigar filler and scrap shipped into United States comes from Cuba and is used principally for blending with mainland or Puerto Rican leaf in the manufacture of cigars retailing for 5 cents. In this use, Cuban filler is usually considered supplementary rather than competitive with mainland or Puerto Rican leaf. In a sense, however, stemmed Cuban tobacco can be regarded as competitive with the product^{of} the leaf tobacco industry in the Island since the stemming could have been done in the Island. Under the Cuban agreement that went into effect January 5, 1942, stemmed tobacco from Cuba is dutiable at 20 cents per pound as contrasted with 14 cents per pound rate on unstemmed filler (see Table XXXIV).

It is also interesting to observe the little influence which the tariff exerts on stemmed tobacco shipped from Cuba. Between 1926 and 1934, when stemmed tobacco from Cuba was dutiable at 40 cents a pound, the States' imports decreased from a high of 14,004,853 pounds to a low of 6,663,588 pounds. Since September 3, 1934, the rate was reduced from 40 cents to 25 cents in March 37, 1936, but imports, instead of increasing, went down from 6,663,588 pounds in 1934 to 6,351,950 pounds in 1936. This same tendency has been observed after the application of the new rate that went into effect in December 23, 1939, and points to the conclusion that other factors beside the tariff are tremendously influential in determining the quantity of Cuban tobacco that goes into the mainland.

3. The A.A.A. Program.

The Agricultural Adjustment Act was made applicable to the Island since the date of approval, May 1933. Under its provisions an agricultural adjustment program was put into operation in Puerto Rico, covering the crop year 1933-34. The application of such a program came at a time when the industry was going through a very critical situation. Not only the effects of the hurricanes of 1928 and 1932 were being felt in the entire industry, but also the unfavorable results of the shifting of the tobacco demand from cigar leaf to cigarette leaf tobacco.

The adjustment program for 1933-34 provided for benefit payments to growers entering to contract with the A.A.A. for each cuerda of the second crop (ratoon crop) they agreed to destroy. The compensation payments varied according to the type of tobacco destroyed. If tobacco destroyed was of the priming type, payments amounted to \$10 per cuerda, or to \$15 if it was stalk-out. Total benefit payments to tobacco growers under contract with the A.A.A. amounted to \$652,474.80 that year.

Benefit payments for the year 1934-35 were made on the basis of tobacco acreage in the crop years of 1929-30, 1930-31, 1932-33 and 1933-34. The grower's base tobacco acreage was 85 per cent of the average number of cuerdas for the crop years selected by him, which could be either the four crop years taken as basis or any combination of three of them. For this period any grower under contract with the A.A.A. had either to reduce his base acreage by 25 per cent, harvesting only one crop, or reduce base acreage by 40 per cent and harvest two crops. The payment made to each grower was \$30 for each cuerda retired from production plus 30 per cent of the market value of the tobacco harvested for the period.

Compensation payments for the period 1935-36 were made on the basis of \$13.41 per cuerda harvested but upon condition that the growers under contract did not plant in tobacco more land acreage than that allowed under the provisions of the agreements for that year. Total benefit payments under adjustment contracts for this period amounted to \$918,195.43.

The Agricultural Adjustment Program was discontinued in 1936 as a result of a decision of the Supreme Court of the United States that ruled it unconstitutional on the grounds that Congress had no power to promote legislation for the purpose of regulating or controlling agricultural production in the States. Instead a Soil Conservation program was put into effect to regulate tobacco production for subsequent years.

Under provisions approved for the crop years 1936-37 and 1937-38 growers received benefit payments of \$20 for each cuerda not planted in tobacco but planted in crops that covered and protected the soil. A limit not exceeding 30 per cent of the grower's tobacco base acreage was fixed as the total maximum acreage upon which payment could be made for each

cuerda not planted in tobacco. No definite or particular amount of acreage reduction was required as condition for payment for each cuerda not planted in tobacco, under soil conservation practices. The growers under agreement also received extra payment for such practices as application of fertilizers and contour cultivation.

Under the program applied for the year 1938-39 benefit payments of \$15 for each acre within the basic tobacco acreage allotment fixed for the farm were provided for. The total maximum acreage upon which benefit payments might be tendered could not exceed 41 per cent of farm base acreage. Provision was made for this year to make payment to growers irrespective of the practices he might follow regarding his land. In other words, growers covered by the program were entitled to payments whether allotment acreage was planted in tobacco, devoted to any other crop, or left to lie fallow. Extra compensations were also provided for certain conservation practices.

The Agricultural Adjustment Program in Puerto Rico has helped to increase the purchasing power of tobacco farmers and in the betterment of prices received by the farmers for their product, by restricting production through acreage control.

Tobacco acreage after the application of the Conservation Program increased considerably. Due to this fact the tobacco industry faced an overproduction problem after 1937-38 which led to the low prices received by the farmers in 1939. Acreage was reduced during this year in an effort to improve this situation. As a result of this reduction the average price received by the farmer in 1939 was 18 cents per pound as against 11 cents received by the farmer in 1938. Acreage, however, was almost doubled again in 1940, which helped to depress the average price received for another time.

CHAPTER VII

FRUITS AND MINOR CROPSA. Grapefruit.1. Importance and Actual Situation.

Grapefruit production in Puerto Rico dates since the American occupation of the Island. Its importance as a source of income and employment increased considerably until 1929-30 when the highest record mark in shipments was reached. Following 1930, production dropped sharply, falling 62 per cent below the 1930 level in 1938. Part of this drop was due to hurricane damage to the groves in 1928 and 1932, the full impact of which was not felt for several years, but mainly it was due to market conditions. It has been claimed that the actual situation prevailing in the industry is due not to concessions granted to Cuba but rather to actual competition coming from mainland producing areas like Texas and Florida, among other factors.

2. Effect of Cuban Agreement and Increased Continental Production.

In the reciprocal trade agreement with Cuba, the duty on grapefruit from that country was reduced from 0.012 cents per pound to 0.006 cents per pound, during the months of August and September of each year. Let us analyze what influence this reduction exerted on sales in the American market of the Cuba, the Puerto Rican, and the domestically produced grapefruits.

Table XXXV shows the average production of grapefruits on the basis of five-year periods in the United States as compared to average shipments from Cuba and Puerto Rico on the same basis.

On the basis of five-year periods average production increased in the Mainland from a low of 7,526,000 boxes in the period 1919-23 to a high of 28,892,600 in 1934-38, an increase of approximately 284 per cent in a period of 20 years. Cuban shipments to the Mainland, on the other hand, decreased on the average from 149,000 boxes in 1919-23 to 88,750 boxes for the period 1934-38, a decrease of about 47 per cent in the same number of years. Imports from Puerto Rico also decreased from 515,400 boxes shipped on the average in the period 1919-23 to 211,000 boxes for 1934-38, a decrease of 59 per cent.

Table XXXV

Grapefruit: United States Production, Imports from Cuba, and Shipments from Puerto Rico, average 5-year periods, 1919-1938.

5-Year Periods	:	United States	:	Cuba	:	Puerto Rico
	:	Average	:	Imports	:	Shipments
	:	Production	:		:	
	:	Boxes	:	Boxes	:	Boxes
1919-23	:	7,526,000	:	149,000	:	515,000
1924-28	:	10,250,800	:	138,800	:	637,600
1929-33	:	14,950,400	:	90,600	:	528,600
1934-38	:	28,892,600	:	88,750	:	211,000
	:		:		:	

Source: Compiled from information given in the "Staff Report to the Inter-departmental Committee on Puerto Rico," by Erich W. Zimmermann, 1940.

It can be seen from this analysis that the reduction on the duty on imports of grapefruit from Cuba made in 1934 had no material influence in increasing sales in the Mainland. On the contrary, both Cuba and Puerto Rico have lost a substantial part of the domestic market due largely to increased production in continental areas. Among the chief continental areas where this increase since 1929 has been peculiarly marked, are California, Texas, and Arizona.

One fact, however, should not be overlooked. Duty concessions to Cuba are limited to grapefruit entered between August 1 and September 30, inclusive, of each year, the period when sales from continental areas are lowest and from Puerto Rico highest. This has caused an increase in Cuba's sales during these months, and, beyond a doubt, has been a factor in the reduced sales from the Island during these months. However, it is also true that by concentrating the entries of Cuban grapefruit to the months of August to September, the Cuban source of competition during the other months has been to a certain extent removed, to the benefit of Puerto Rican growers. It would seem to be to the Island's interest to follow a policy of concentration in its shipments, and instead of spreading them through the year, to rely heavily on them just after and just before the heavy shipments of domestic grapefruit. The domestic market is for the most part clear of Cuban grapefruit during the months of April to August.

3. Trend in Grapefruit Exports and Prices.

Table XXXVI shows the statistics available for the exportation of fresh grapefruit from Puerto Rico, for fiscal years 1925-26 to 1939-40.

Exportation of fresh grapefruits reached a peak movement during the fiscal year 1929-30, when the total exports represented a total value of \$3,621,700. All of the shipments made were to the Mainland for no sale was recorded for this year to foreign countries. Shipments fell off considerably during the fiscal year 1932-33, due principally to hurricane damage and only 283,971 boxes were shipped to outside markets as against 978,330 boxes shipped during the fiscal year 1929-30. Because of the low prices of the depression that started in 1932 the Island has never fully recovered from the effects of the 1932 hurricane. Though shipments rose again during 1933-34, they have fallen abruptly since that period. Only

Table XXXVI

Exportation of Fresh Grapefruit from Puerto Rico
Fiscal Years 1925-26 to 1939-40. 1/

Fiscal Year	Exports to United States		Total Exportation		Average Value Per Box (Dollars)
	Quantity (boxes)	Dollars	Quantity (boxes)	Dollars	
1925-26	809,038	2,479,487	809,866	2,482,123	3.0648
1926-27	692,052	2,095,908	692,052	2,095,908	3.0285
1927-28	891,940	2,704,310	891,940	2,704,310	3.0319
1928-29	215,337	529,627	215,337	529,627	2.4595
1929-30	978,330	3,621,700	978,330	3,621,700	3.7019
1930-31	428,417	1,392,250	428,417	1,392,250	3.2497
1931-32	550,017	1,632,492	625,758	1,820,051	2.9085
1932-33	266,422	805,568	283,971	858,598	3.0235
1933-34	420,714	1,123,098	479,119	1,257,632	2.6248
1934-35	214,681	483,548	215,858	486,765	2.2550
1935-36	355,664	788,930	356,196	790,069	2.2180
1936-37	145,516	315,516	145,538	315,580	2.1683
1937-38	127,366	270,219	127,366	270,219	2.1215
1938-39	56,690	110,612	56,690	110,612	1.9591
1939-40	83,512	162,668	83,515	162,672	1.9478

1/ Difference between total exportation figures and figures for exports to United States in some years accounts for shipments to foreign countries.

Source: P.R. Department of Agriculture and Commerce, "Annual Book on Statistics, 1939-40."

83,515 boxes were exported during 1939-40, of which almost 99.9 per cent were shipped to the Mainland.

Coincident with the rapid increase in the Mainland production since 1929 one finds an abrupt decline in the level of prices for all grapefruit sold in domestic markets. Auction prices for grapefruit on the New York market were approximately 50 per cent lower in 1937-38 as in 1929-30, and about 48 per cent below the level prevailing from 1926 to 1930. The average annual prices of Puerto Rican grapefruit, for the period 1931-34, was \$2.36 per crate, as contrasted with an average of \$2.18 per crate in 1935-38.

TABLE I

Exportation of Wheat and Wheat Flour from the United States to the United Kingdom, 1925-26 to 1935-36

Year	Quantity (bushels)	Value (dollars)	Quantity (bushels)	Value (dollars)
1925-26	1,000,000	1,000,000	1,000,000	1,000,000
1926-27	1,000,000	1,000,000	1,000,000	1,000,000
1927-28	1,000,000	1,000,000	1,000,000	1,000,000
1928-29	1,000,000	1,000,000	1,000,000	1,000,000
1929-30	1,000,000	1,000,000	1,000,000	1,000,000
1930-31	1,000,000	1,000,000	1,000,000	1,000,000
1931-32	1,000,000	1,000,000	1,000,000	1,000,000
1932-33	1,000,000	1,000,000	1,000,000	1,000,000
1933-34	1,000,000	1,000,000	1,000,000	1,000,000
1934-35	1,000,000	1,000,000	1,000,000	1,000,000
1935-36	1,000,000	1,000,000	1,000,000	1,000,000

The difference between the quantity of wheat and wheat flour exported to the United Kingdom in 1925-26 and 1935-36 is 1,000,000 bushels.

Source: U.S. Department of Agriculture, Bureau of Statistics, Washington, D.C., 1936-37.

62. The wheat was exported during 1925-26 and 1926-27 at a price of 20.0 per bushel.

Comparison with the wheat imported in the United Kingdom

Since 1925 the United Kingdom has been a net importer of wheat. The average annual price of wheat imported into the United Kingdom in 1925-26 was 20.0 per bushel. The average annual price of wheat imported into the United Kingdom in 1935-36 was 20.0 per bushel. The average annual price of wheat imported into the United Kingdom in 1925-26 was 20.0 per bushel. The average annual price of wheat imported into the United Kingdom in 1935-36 was 20.0 per bushel.

B. Pineapples.

1. Importance.

Pineapple production is considered to be the most intensive fruit industry of the Island from the standpoint of employment and income in relation to acreage used. It has been estimated that 1,600 acres of land were required for its production in 1935 and that the value of the crop for the same year was \$841,000, or \$537 per acre. This compares favorably with grapefruit production which for the year mentioned required 11,400 acres but only yielded \$133 per acre. About 25 per cent of the pineapple production has been used locally in recent years and about 12 per cent has been canned. Most of the production is shipped to the Mainland, where it has found a favorable market.

2. Trend in Pineapple Exports.

Puerto Rico is the only domestic area producing a substantial amount of pineapples for the fresh fruit market in the Mainland. Continental areas account for approximately one per cent of the fresh pineapple continental requirements, while Hawaii only for three or four per cent. From 1927 to 1930, the Island supplied about 30 per cent of the continental fresh pineapple requirements, each year, the only exception being 1928-29, when the crop was damaged somewhat by hurricane. From 1931 to 1935, however, Puerto Rico provided for approximately 37 per cent of the continental requirements each year. Under the reciprocal trade agreement with Cuba reached late in 1934, the rate of duty on Cuban fresh pineapples in crates was reduced by 50 per cent, from 40 cents to 20 cents per crate of 2.45 cubic feet, and under the trade agreement with Haiti in 1935, the rate of duty on fresh pineapples from all other countries was reduced 30

per cent. The full effect of these trade agreements was not felt until the 1938 season, but this incentive to fresh pineapple imports increased the percentage supplied by foreign pineapples from 56.4% in 1935 to 69.5% in 1937, and lowered that of the Island's pineapples from 37.9% to 28.0%. Trade statistics for 1939-40 indicate that foreign pineapples constituted a larger percentage of the continental requirements than in 1937.

Table XXXVII shows the exportation of fresh pineapples from Puerto Rico for fiscal years 1925-26 to 1939-40. The differences in some

Table XXXVII

Exportation of Fresh Pineapples from P. R.
Fiscal Years 1925-26 to 1939-40.

Fiscal Year	Exports to the United States		Total Exportation		Average Value	
	Quantity	Dollars	Quantity	Dollars	Per Crate	
1925-26	506,415	\$1,533,373	506,710	\$1,534,173		\$3.0277
1926-27	597,313	1,791,109	597,313	1,791,109		2.9986
1927-28	549,280	1,654,108	549,280	1,654,108		3.0114
1928-29	528,522	1,727,063	528,522	1,727,063		3.2677
1929-30	501,058	1,743,862	501,058	1,743,862		3.4803
1930-31	703,280	2,278,449	703,280	2,278,449		3.2397
1931-32	614,058	1,894,495	614,878	1,896,728		3.0847
1932-33	409,868	1,212,658	414,080	1,225,225		2.9589
1933-34	413,336	1,029,159	423,540	1,056,673		2.4948
1934-35	395,613	911,219	395,613	911,219		2.3033
1935-36	521,016	1,183,424	521,016	1,183,424		2.2713
1936-37	523,140	1,213,978	523,140	1,213,978		2.3205
1937-38	484,734	939,451	484,734	939,451		1.9380
1938-39	463,860	862,423	463,860	862,423		1.8592
1939-40	425,022	842,801	425,022	842,801		1.8929

Source: P.R. Department of Agriculture and Commerce, "Annual Book on Statistics, 1939-40."

years between shipments to United States and total exportation represent the quantity of pineapple exported to foreign countries. It may be noted that Puerto Rican pineapples are sold almost exclusively in the Mainland markets. Exports reached their peak movement in fiscal year 1930-31, when

per cent. The fall effect on these kinds of movements was not very great. The 1935 season, but this relative to these kinds of movements. The percentage supplied by foreign countries from 1935 to 1937, in 1937, and showed that of the total supplies from 1935 to 1937, trade statistics for 1935-36 indicate that foreign supplies constituted a larger percentage of the domestic requirements than in 1937. Table XVII shows the percentage of foreign supplies from 1935 to 1937 for fiscal years 1935-36 to 1937-38. The difference is also

Table XVII

Percentage of foreign supplies from 1935-36 to 1937-38
Fiscal years 1935-36 to 1937-38

Fiscal Year	Domestic Production	Foreign Supplies	Percentage of Foreign Supplies
1935-36	1,000,000	200,000	20.0
1936-37	1,100,000	220,000	19.9
1937-38	1,200,000	240,000	20.0
1938-39	1,300,000	260,000	20.0
1939-40	1,400,000	280,000	20.0
1940-41	1,500,000	300,000	20.0
1941-42	1,600,000	320,000	20.0
1942-43	1,700,000	340,000	20.0
1943-44	1,800,000	360,000	20.0
1944-45	1,900,000	380,000	20.0
1945-46	2,000,000	400,000	20.0
1946-47	2,100,000	420,000	20.0
1947-48	2,200,000	440,000	20.0
1948-49	2,300,000	460,000	20.0
1949-50	2,400,000	480,000	20.0
1950-51	2,500,000	500,000	20.0
1951-52	2,600,000	520,000	20.0
1952-53	2,700,000	540,000	20.0
1953-54	2,800,000	560,000	20.0
1954-55	2,900,000	580,000	20.0
1955-56	3,000,000	600,000	20.0
1956-57	3,100,000	620,000	20.0
1957-58	3,200,000	640,000	20.0
1958-59	3,300,000	660,000	20.0
1959-60	3,400,000	680,000	20.0

Source: U.S. Department of Agriculture, Statistical Service, Washington, D.C.

years between 1935 and 1937, and total requirements. The quantity of supplies reported to foreign countries. It was to be noted that foreign supplies represented approximately 20 percent of the total requirements. Imports of these supplies in fiscal years 1935-36, 1936-37, and 1937-38 were 200,000, 220,000, and 240,000, respectively.

703,280 crates were shipped at a total value of \$2,278,449, declined progressively to 395,613 crates in 1934-35, rose again in 1935-36, and subsequently declined substantially to a level of 425,022 crates in the fiscal year 1939-40.

Cuba is the only other important east coast competitor of the Island in the Mainland markets. Cuba's shipments averaged 1,152,748 crates in 1927-30, 852,189 crates in 1931-34, and 907,268 crates in the period 1935-38, whereas Puerto Rico's shipments for the same periods averaged 547,448, 529,060, and 487,280 crates respectively. The latter period (1935-38) covers the years in which the United States-Cuban agreement was in effect.

3. Trend in Pineapples Auction Prices.

Average annual and monthly auction prices for Puerto Rican pineapples have, except for 1932, exceeded those for Cuban pineapples at New York, where the bulk of the Puerto Rican entries are sold. This has been due not to higher quality on the part of the Puerto Rican pineapples, but rather to the advantage of having them present in the New York auction market and available to the buyers for longer periods of time, and to the fact that the bulk of Puerto Rican pineapples used to reach New York for sale one day ahead of the main sale of Cuban pineapples. The smoking process employed in Puerto Rico in pineapple production has helped a great deal in reaching the New York market ahead of Cuba's crop, while the presence of the fruit in this market at the off-season during February, March and April has been instrumental in keeping auction prices at a higher level than those received by Cuban shippers.

1935, 1936 prices were subject to a total value of \$2,775,444, declining progressively to \$25,512 in 1937-38, some again in 1938-39, and subsequently declined substantially to a level of \$25,512 in the fiscal year 1939-40.

Cuba is the only other important sugar export country of the island in the island market. Cuba's shipments averaged \$1,184,718 in 1937-38, \$22,133 in 1938-39, and \$20,738 in 1939-40. During 1935-36, average prices for the same period averaged \$27,448, \$23,000, and \$27,500 respectively. The latter period (1935-36) covers the years in which the United States-Cuba agreement was in effect.

2. Trend in Philippine Market Prices

Average annual and monthly market prices for sugar in the Philippines have, except for 1932, averaged about the same as those in New York, where the bulk of the Philippine sugar exports are sold. This has been due not to higher demand in the rest of the world in the Philippines, but rather to the advantage of having the market in the New York market and available to the buyers for longer periods of time, and to the fact that the bulk of the Philippine sugar exports used to reach New York for sale one day ahead of the sale in the United States. The marketing process employed in Puerto Rico in the Philippine market has helped a great deal in reducing the New York market share of the sugar, while the presence of the fruit in this market at the off-peak during January, March, and April has been instrumental in keeping another price at a higher level than those received by Cuban sugar.

Average auction prices on the New York auction market for imports from Puerto Rico during the period of January to May, inclusive, averaged \$2.66 in 1935, \$2.47 in 1936, \$2.24 in 1937, \$2.24 in 1938, and 1.89 in 1939--a progressive decline equivalent to a total of 77 cents per crate (see Table XXXVIII). This coincided with an increase in Cuban sales between January and May into the New York Customs district from about 17,000 crates or 12.3 per cent of total sales in 1934 to 89,300 crates, or 35.9 per cent of total sales, in 1939. It is justifiable to

Table XXXVIII

Sales of Fresh Pineapples on New York
Auction Market, January to May,
Inclusive, 1934 - 1939.

Year	Puerto Rican Pineapples			Cuban Pineapples		
	Crates	Price 1/		Crates	Percentage	
	Thousands	Dollars		Thousands	Per Cent	
		per				
		Crate				
1934	121.2	2.49		17.0	12.3	
1935	114.7	2.66		18.5	13.9	
1936	161.4	2.47		28.9	15.2	
1937	178.6	2.24		46.2	20.6	
1938	109.0	2.24		74.3	40.5	
1939	159.7	1.89		89.3	35.9	

Source: Compiled from New York Daily Fruit Reporter.

1/ Weighted Average.

assume that the increasing percentage of Cuban sales at New York spelled keener competition for Puerto Rican pineapples and is responsible to a certain extent for the decline of average auction prices of Puerto Rican pineapples in the New York market. Other factors that have also been detrimental to the Puerto Rican pineapple industry and that constitute additional explanation of the low prices being received by Puerto Rican growers are: (1) the increased production of competing lower-priced fruits,

Average market prices in the New York market for the
 years from 1900 to 1909, inclusive, the prices of January 1st, 1900, and
 averaged 25.00 in 1900, 24.10 in 1901, 23.25 in 1902, and
 1.00 in 1909—a progressive decline equivalent to a rate of 10 cents
 per cent (see Table XXVIII). This decline with an increase in other
 rates between January and July into the New York market district from
 about 17,000 acres to 12.5 per cent of total sales in 1909 to 25,000
 acres, or 15.5 per cent of total sales in 1900. It is impossible to

TABLE XXVIII

Sales of Fresh Potatoes in the New
 York Market, January 1st to
 inclusive, 1900-1909.

Year	Quantity	Price	Value
1900	17,000	25.00	425.00
1901	17,000	24.10	409.70
1902	17,000	23.25	395.25
1903	17,000	22.40	380.80
1904	17,000	21.55	366.35
1905	17,000	20.70	351.90
1906	17,000	19.85	337.45
1907	17,000	19.00	323.00
1908	17,000	18.15	308.55
1909	25,000	17.30	432.50

Source: Compiled from New York Market Reports.
 * Weighted average.

reason that the increasing percentage of sales in the New York market
 season competition for fresh potatoes from foreign sources is responsible for a
 certain extent for the decline of average market prices of fresh potatoes
 throughout in the New York market. Other factors that have also been
 mentioned as the cause of the decline in the New York market and the consequent
 liberal expansion of the New York market being received in fresh potato
 areas (1) the increased production of competing lower-priced foreign

(2) the increased use of canned pineapples, and (3) the economic recession in the United States in 1938 and 1939.

4. Present Difficulties of the Pineapple Industry.

Present difficulties of the fresh pineapple industry in Puerto Rico have resulted from increased competition of Cuban pineapples in the New York market which is believed to have been encouraged by the recent United States-Cuban agreement, inability of Puerto Rican growers to obtain pineapple slips from Cuba, who lately has refused to sell them, and from disease and hurricane damage. All these factors seem to account for the inability of the Puerto Rican growers to increase output, a fact which they hold constitutes the main economic problem facing the industry.

A solution to these difficulties lies mainly with the United States government. Restriction of Cuban imports at New York through increased duties or other means would probably raise prices received by the Puerto Rican fruit growers and finally increase production in the Island. As for the question of pineapple slips, the record is such that it seems advisable for the United States government to undertake effective action to enforce the provision of the reciprocal agreement with Cuba calling for the removal of all unnecessary obstacles incident to the purchase in Cuba of pineapple slips by Puerto Rican growers. Such undertaking, no doubt, would result in returning the pineapple industry to a basis in which again it will become a source of income and employment for the Puerto Rican people.

C. Coconuts and Oranges.

1. Coconuts.

Puerto Rico produces two types of coconuts, the green and yellow varieties. Coconut production in the Island is estimated at 16,500,000,

20 per cent of which is believed to be sold as culls at very reduced prices. The Census of 1935 recorded a production of 27,901,000 for that year. This is the highest census figure on record. In 1910 production was 15,568,000; in 1920, 24,608,000; and in 1930, 12,003,000 coconuts (see Table XXXIX). This last census year (1935) shows the effect of the 1928 hurricane.

Coconuts in Puerto Rico are grown in scattered areas along the littoral, occupying approximately 10,000 acres. The area has suffered no wide variations during the last 20 years. According to the 1935 Census there were approximately 540,000 bearing trees on the Island at the time. There were 61,000 more trees of bearing age and 153,000 fewer trees of non-bearing age in 1935 than there were in 1920. This constitutes a net decline of approximately 92,000 trees during the fifteen year period.

Table XXXIX

Number of Palms and Coconut Production in Puerto Rico
1910 to 1935.

	Farms Reporting	Number of	Number		
	Per Cent	Palms	of	Production	
Number	of all	not	Palms	(Thousands)	
	Farms	Bearing	Bearing		
1910	3,809	6.5	228,351	298,316	15,568
1920	4,712	11.5	311,150	478,054	24,608
1930	11,141	21.0	439,681	471,032	12,003
1935	8,824	16.7	157,621	539,243	27,901

Source: Census of Puerto Rico: 1935.

From about one-fourth to one-third of Puerto Rico's annual coconut production is shipped to continental markets. Nuts shipped to these markets are sold chiefly to the consumer in the fresh state. Exportation

of coconuts in the shell from Puerto Rico to the United States reached its highest level in fiscal year 1926-27 when 23,286,000 nuts were sold at a value of \$612,684. Since that year shipments declined almost progressively reaching a low of 6,033,000 nuts in 1933-34, but again rose to a high level of 16,667,000 nuts in 1939-40 (see Table XL).

Table XL

Exportation of Coconuts in the Shell from
Puerto Rico to the United States
Fiscal Years 1923-24 to 1939-40

Fiscal Year	Quantity	Dollars	Average Value Per 1,000
1923-24	18,321,000	\$605,129	\$33.0292
1924-25	19,449,000	709,853	36.4981
1925-26	18,000,000	611,977	33.9987
1926-27	23,286,000	612,684	26.3112
1927-28	23,088,000	697,972	30.2309
1928-29	8,669,000	249,665	28.7997
1929-30	6,552,000	218,787	33.3923
1930-31	8,137,000	232,388	28.5594
1931-32	11,386,000	268,708	23.5998
1932-33	7,279,000	152,055	20.8895
1933-34	6,033,000	171,259	28.3870
1934-35	8,190,000	232,782	28.4227
1935-36	12,908,000	325,718	25.2338
1936-37	12,786,000	329,518	25.7717
1937-38	11,488,000	295,597	25.7309
1938-39	15,033,000	306,021	20.3566
1939-40	16,667,000	289,310	17.3582

Source: P.R. Department of Agriculture and Commerce, "Annual Book on Statistics, 1939-40."

The plight of Puerto Rican coconut growers is due principally to low production and low prices. The hurricanes of 1928 and 1932 destroyed a considerable portion of the bearing trees, a fact which is held to account for the low production of the groves. Recognizing the distressed condition of the industry because of the damage done to the palms

of accounts in the shell from 1935-36 to the United States...
 the highest level in 1935-36 was \$1,000,000...
 at a value of \$1,000,000...
 progressively increasing a few of \$1,000,000...
 to a high level of \$1,000,000 in 1935-36 (see Table X).

TABLE X
 Comparison of Accounts in the Shell from
 1935-36 to the United States
 (Values in millions of dollars)

Year	Quantity	Value	Value
1935-36	1,000,000	\$1,000,000	\$1,000,000
1936-37	1,000,000	\$1,000,000	\$1,000,000
1937-38	1,000,000	\$1,000,000	\$1,000,000
1938-39	1,000,000	\$1,000,000	\$1,000,000
1939-40	1,000,000	\$1,000,000	\$1,000,000
1940-41	1,000,000	\$1,000,000	\$1,000,000
1941-42	1,000,000	\$1,000,000	\$1,000,000
1942-43	1,000,000	\$1,000,000	\$1,000,000
1943-44	1,000,000	\$1,000,000	\$1,000,000
1944-45	1,000,000	\$1,000,000	\$1,000,000
1945-46	1,000,000	\$1,000,000	\$1,000,000
1946-47	1,000,000	\$1,000,000	\$1,000,000
1947-48	1,000,000	\$1,000,000	\$1,000,000
1948-49	1,000,000	\$1,000,000	\$1,000,000
1949-50	1,000,000	\$1,000,000	\$1,000,000
1950-51	1,000,000	\$1,000,000	\$1,000,000
1951-52	1,000,000	\$1,000,000	\$1,000,000
1952-53	1,000,000	\$1,000,000	\$1,000,000
1953-54	1,000,000	\$1,000,000	\$1,000,000
1954-55	1,000,000	\$1,000,000	\$1,000,000
1955-56	1,000,000	\$1,000,000	\$1,000,000
1956-57	1,000,000	\$1,000,000	\$1,000,000
1957-58	1,000,000	\$1,000,000	\$1,000,000
1958-59	1,000,000	\$1,000,000	\$1,000,000
1959-60	1,000,000	\$1,000,000	\$1,000,000

Source: U.S. Department of Commerce and Statistics, Bureau of Economic Analysis, Washington, 1960-61.

The figure on foreign direct investment in the United States...
 in the production and the growth...
 through a considerable portion of the foreign investment...
 to account for the low production of the United States...
 general situation of the economy because of the large share of the...

by both hurricanes, the local Legislature enacted Act No. 120, approved May 15, 1936, condoning the property taxes on coconut groves for a period of seven years, from 1933-34 to 1939-40.

Another major problem of the coconut growers in Puerto Rico is the low selling price of their product since January 1, 1939, when the duties on coconuts from competing foreign countries was reduced from \$5 to \$2.50 per 1,000 nuts in the Trade Agreement with the United Kingdom. The average export value in the Island has dropped progressively since that date and reached its lowest level on record in 1939-40, when Puerto Rican growers received an average value of \$17.36 per 1,000 nuts.

This substantial drop in coconut prices increased the interest in the industrialization of the coconut in Puerto Rico. As a result in 1940 two industrial plants were established on the Island, one for the preparation of shredded coconut, and the other for the preparation of compound lard and oleomargarine. All indications are that coconut plantings will increase in the near future due to the demand from these factories.

2. Fresh Oranges.

Orange production in Puerto Rico for census year 1910, 1920, 1930, and 1935 was 690,716, 1,354,411, 871,370, and 1,003,988 boxes respectively. Aside from a few boxes sold in outside markets, most of the actual orange production is sold at the local markets. The 1935 Census enumerated 17,524 farms devoting part of the land to orange production, a total of 1,240,269 bearing trees, and about 618,000 non-bearing.

The Mainland market for Puerto Rican fresh oranges has practically disappeared during recent years. The same could be said of the foreign markets. The loss of the Mainland market, which always had been

by both countries. The first industrial sector was the textile industry, which was the main export of both countries in the 1930s. In 1935, the textile industry accounted for 40% of the total exports of both countries. The second sector was the food industry, which was also a major export for both countries. The food industry accounted for 30% of the total exports of both countries in 1935.

Another major sector of the economy was the mining industry. The mining industry was a major export for both countries in the 1930s. The mining industry accounted for 20% of the total exports of both countries in 1935. The mining industry was a major export for both countries in the 1930s. The mining industry accounted for 20% of the total exports of both countries in 1935. The mining industry was a major export for both countries in the 1930s. The mining industry accounted for 20% of the total exports of both countries in 1935.

This industrial sector was the main export of both countries in the 1930s. The industrial sector accounted for 40% of the total exports of both countries in 1935. The industrial sector was the main export of both countries in the 1930s. The industrial sector accounted for 40% of the total exports of both countries in 1935. The industrial sector was the main export of both countries in the 1930s. The industrial sector accounted for 40% of the total exports of both countries in 1935.

Textile industry.

Food industry.

Large production in 1935 was 1,000,000 tons. In 1935, the textile industry produced 1,000,000 tons of textile goods. In 1935, the food industry produced 1,000,000 tons of food goods. In 1935, the mining industry produced 1,000,000 tons of mining goods. In 1935, the industrial sector produced 1,000,000 tons of industrial goods.

The industrial sector was the main export of both countries in the 1930s. The industrial sector accounted for 40% of the total exports of both countries in 1935. The industrial sector was the main export of both countries in the 1930s. The industrial sector accounted for 40% of the total exports of both countries in 1935.

the main export outlet for the Puerto Rican orange production, may be attributed to the small size of the product, to deficient marketing methods, and to increased orange production in continental areas and other domestic areas.

Table XLI

Exportation of Fresh Oranges from Puerto Rico
Fiscal Years 1925-26 to 1939-40.

Fiscal Year	Exports to the United States		Total Exportation		Average Value Per Box (Dollars)
	Quantity	Dollars	Quantity	Dollars	
	(Boxes)		(Boxes)		
1925-26	463,709	\$1,196,430	464,432	\$1,197,700	\$2.5788
1926-27	311,294	732,689	311,294	732,689	2.3536
1927-28	546,463	1,286,039	546,463	1,286,039	2.3533
1928-29	21,991	59,760	21,991	59,760	2.7174
1929-30	221,353	628,541	221,353	628,541	2.8395
1930-31	96,661	263,441	96,661	263,441	2.7254
1931-32	39,276	95,061	40,137	96,211	2.3970
1932-33	13,548	38,778	14,788	40,381	2.7306
1933-34	18,866	49,819	21,849	54,274	2.4840
1934-35	17,432	37,193	20,143	40,838	2.0274
1935-36	4,562	9,473	5,752	11,857	2.0613
1936-37	2,615	5,265	3,392	6,049	1.7833
1937-38	1,976	3,984	2,307	4,462	1.9341
1938-39	1,051	2,041	-----	2,117	-----
1939-40	67	111	341	470	1.3782

Source: Department of Agriculture and Commerce, Monthly Summaries of Foreign Commerce of the U.S. and annual reports, customhouse.

Shipments of fresh oranges from Puerto Rico into the United States reached a peak level in 1927-28, when total boxes shipped aggregated 546,463. From the fiscal year 1929-30 when 221,353 boxes of fresh oranges were exported, shipments to the United States have declined progressively to a low level of 67 boxes in 1939-40. Shipments to foreign countries have been completely insignificant at all times. In Table XLI the difference in some years between total exportation and exports to the United States accounts for the number of boxes sold in foreign markets.

The main export market for the United States is Great Britain, to which is the main share of the product, as follows: (in millions of dollars)

United Kingdom 1920-21 1,000,000,000

Other countries 1920-21 1,000,000,000

Table 1

Imports of raw sugar from foreign sources, 1920-21 to 1925-26

Year	Quantity in millions of pounds	Value in millions of dollars
1920-21	1,000,000	1,000,000,000
1921-22	1,000,000	1,000,000,000
1922-23	1,000,000	1,000,000,000
1923-24	1,000,000	1,000,000,000
1924-25	1,000,000	1,000,000,000
1925-26	1,000,000	1,000,000,000
1926-27	1,000,000	1,000,000,000
1927-28	1,000,000	1,000,000,000
1928-29	1,000,000	1,000,000,000
1929-30	1,000,000	1,000,000,000
1930-31	1,000,000	1,000,000,000
1931-32	1,000,000	1,000,000,000
1932-33	1,000,000	1,000,000,000
1933-34	1,000,000	1,000,000,000
1934-35	1,000,000	1,000,000,000
1935-36	1,000,000	1,000,000,000
1936-37	1,000,000	1,000,000,000
1937-38	1,000,000	1,000,000,000
1938-39	1,000,000	1,000,000,000
1939-40	1,000,000	1,000,000,000
1940-41	1,000,000	1,000,000,000
1941-42	1,000,000	1,000,000,000
1942-43	1,000,000	1,000,000,000
1943-44	1,000,000	1,000,000,000
1944-45	1,000,000	1,000,000,000
1945-46	1,000,000	1,000,000,000
1946-47	1,000,000	1,000,000,000
1947-48	1,000,000	1,000,000,000
1948-49	1,000,000	1,000,000,000
1949-50	1,000,000	1,000,000,000
1950-51	1,000,000	1,000,000,000
1951-52	1,000,000	1,000,000,000
1952-53	1,000,000	1,000,000,000
1953-54	1,000,000	1,000,000,000
1954-55	1,000,000	1,000,000,000
1955-56	1,000,000	1,000,000,000
1956-57	1,000,000	1,000,000,000
1957-58	1,000,000	1,000,000,000
1958-59	1,000,000	1,000,000,000
1959-60	1,000,000	1,000,000,000
1960-61	1,000,000	1,000,000,000
1961-62	1,000,000	1,000,000,000
1962-63	1,000,000	1,000,000,000
1963-64	1,000,000	1,000,000,000
1964-65	1,000,000	1,000,000,000
1965-66	1,000,000	1,000,000,000
1966-67	1,000,000	1,000,000,000
1967-68	1,000,000	1,000,000,000
1968-69	1,000,000	1,000,000,000
1969-70	1,000,000	1,000,000,000
1970-71	1,000,000	1,000,000,000
1971-72	1,000,000	1,000,000,000
1972-73	1,000,000	1,000,000,000
1973-74	1,000,000	1,000,000,000
1974-75	1,000,000	1,000,000,000
1975-76	1,000,000	1,000,000,000
1976-77	1,000,000	1,000,000,000
1977-78	1,000,000	1,000,000,000
1978-79	1,000,000	1,000,000,000
1979-80	1,000,000	1,000,000,000
1980-81	1,000,000	1,000,000,000
1981-82	1,000,000	1,000,000,000
1982-83	1,000,000	1,000,000,000
1983-84	1,000,000	1,000,000,000
1984-85	1,000,000	1,000,000,000
1985-86	1,000,000	1,000,000,000
1986-87	1,000,000	1,000,000,000
1987-88	1,000,000	1,000,000,000
1988-89	1,000,000	1,000,000,000
1989-90	1,000,000	1,000,000,000
1990-91	1,000,000	1,000,000,000
1991-92	1,000,000	1,000,000,000
1992-93	1,000,000	1,000,000,000
1993-94	1,000,000	1,000,000,000
1994-95	1,000,000	1,000,000,000
1995-96	1,000,000	1,000,000,000
1996-97	1,000,000	1,000,000,000
1997-98	1,000,000	1,000,000,000
1998-99	1,000,000	1,000,000,000
1999-00	1,000,000	1,000,000,000
2000-01	1,000,000	1,000,000,000
2001-02	1,000,000	1,000,000,000
2002-03	1,000,000	1,000,000,000
2003-04	1,000,000	1,000,000,000
2004-05	1,000,000	1,000,000,000
2005-06	1,000,000	1,000,000,000
2006-07	1,000,000	1,000,000,000
2007-08	1,000,000	1,000,000,000
2008-09	1,000,000	1,000,000,000
2009-10	1,000,000	1,000,000,000
2010-11	1,000,000	1,000,000,000
2011-12	1,000,000	1,000,000,000
2012-13	1,000,000	1,000,000,000
2013-14	1,000,000	1,000,000,000
2014-15	1,000,000	1,000,000,000
2015-16	1,000,000	1,000,000,000
2016-17	1,000,000	1,000,000,000
2017-18	1,000,000	1,000,000,000
2018-19	1,000,000	1,000,000,000
2019-20	1,000,000	1,000,000,000
2020-21	1,000,000	1,000,000,000

Source: Department of Agriculture, Bureau of Economic Analysis, Foreign Commerce of the United States, Washington.

Imports of raw sugar from foreign sources from the United States reached a peak level in 1920-21, when total foreign sugar imports were 1,000,000,000 pounds. From the 1920s to the 1950s, imports of raw sugar from foreign sources have declined progressively to a low level of 100,000,000 pounds. Imports from foreign sources have been negligible since 1950. The United States is now a net exporter of raw sugar, and exports to other countries are 1,000,000,000 pounds.

D. Vegetables.

1. Importance and Actual Conditions.

Sales of cucumbers, pigeon peas, green peppers, squash, string beans, tomatoes, lima beans, chayotes and other vegetables have shown remarkable growth in Puerto Rico and promise to become an increasing source of income to the Island. It has been claimed, however, that unless Cuban competition aided by reduced tariff rates is eliminated or diminished by some means, the vegetable industry does not warrant very much further expansion. Under the reciprocal trade agreement with Cuba reached on September 3, 1934, duty reductions were made on a number of fresh vegetables imported from Cuba during a period identical with Puerto Rico's shipping season. Chief among these in relation to the Island's vegetable trade are green lima beans, peppers, eggplant, cucumbers, tomatoes, and potatoes. The reduced tariff rate was restricted to shipments made from December 1 to May 31 in the case of green lima beans, January 1 to April 30 in the case of green peppers, December 1 to March 1 in the case of eggplants, cucumbers, and tomatoes, and December 1 to February 1 in the case of potatoes.

2. Trend in Fresh Vegetable Shipments.

Shipments from Puerto Rico in general show a marked upward movement since 1929-30:

"A sharp and progressive upward trend is apparent with respect to the value of shipments from Puerto Rico. As for Cuban imports the upward trend since 1932 is not more than a recovery from a preceding decline. The values of shipments from Puerto Rico show an average of \$100,461 for the five fiscal years 1929-34 and an average of \$183,543 for the more recent five years, 1933-38; or an increase of 83 per cent. However, the average for the four fiscal years immediately preceding the lower Cuban duties, 1930-31 to 1933-34,

2. Importance and Natural Conditions

Sales of sweetpotatoes, green beans, green peppers, eggplants, string beans, tomatoes, lima beans, chard, and other vegetables have shown remarkable growth in Puerto Rico and promise to become an increasing source of income to the island. It has been stated, however, that unless Cuban competition is met by reduced tariff rates it is estimated or diminished by some means, the vegetable industry does not warrant very much further expansion. Under the reciprocal trade agreement with Cuba reached on September 3, 1934, duty reductions were made on a number of fresh vegetables imported from Cuba during a period identical with Puerto Rico's shipping season. Chief among these in relation to the island's vegetable trade are green lima beans, green beans, eggplants, sweetpotatoes, tomatoes, and potatoes. The reduced tariff rate was restricted to shipments made from December 1 to May 31 in the case of green lima beans, January 1 to April 30 in the case of green beans, December 1 to March 1 in the case of eggplants, and December 1 to February 1 in the case of sweetpotatoes, tomatoes, and potatoes.

3. Trend in Fresh Vegetable Shipments

Shipments from Puerto Rico to general cargo are marked upward

movement since 1929-30.

A sharp and progressive upward trend is apparent with respect to the value of shipments from Puerto Rico. As for Cuban imports the upward trend since 1929 is not more than a recovery from a preceding decline. The values of shipments from Puerto Rico show an average of \$100,000 for the five fiscal years 1929-30 and an average of \$192,843 for the more recent five years, 1933-34; or an increase of 85 per cent. However, the average for the four fiscal years immediately preceding the latest Cuban duties, 1930-31 to 1933-34,

was \$106,798, compared with an average of \$183,343 for the 4 years following the initiation of lower duties, 1934-35 to 1937-38. In this instance, the increase in the latter period compared with the former was 70 per cent." (1)

Shipments during the fiscal years 1935-36 to 1939-40 were as shown in the table in the following page.

3. Problems Facing Vegetable Production.

One of the principal problems facing vegetable production in the Island has been the marketing of the fresh products in continental United States. This has been due to the scarcity of refrigeration ships reaching the Island. Before the outbreak of the present war sailings of boats with refrigeration facilities were restricted to two every other week and one in the intervening weeks. Moreover, conditions of temperature and humidity in these boats were not good. Until recent times, therefore, most vegetable growers in the Island lacked the facilities and a thorough knowledge of the methods essential to a successful marketing of their product. For a number of years a cooperative for the marketing of vegetables has been in operation in Isabela, and in the 1938-39 marketing season tomatoes were shipped to outside markets by a newly organized cooperative in Jayuya. In addition, the Puerto Rico Reconstruction Administration, in 1939, financed and assisted in the organization of other cooperatives to serve other vegetable-growing zones.

Besides this problem vegetable growers are facing the problems relative to an efficient production of high quality vegetables and the successful operation of marketing cooperatives. Lack of knowledge relative

(1) Zimmermann, Erich W., "Staff Report to the Interdepartmental Committee on Puerto Rico," Washington, 1940.

was 1100, 1950, compared with an average of 1150, 1950 for
the 6 years following the installation of lower taxes,
1954-59 to 1959-60. In this instance, the increase in
the latter period coincides with the former and is not
causal." (1)

Assignment during the fiscal years 1954-55 to 1959-60 was as

shown in the table in the following page.

3. Tropical Fruit Production

One of the principal problems facing vegetable production in the

Island has been the marketing of the local produce in continental United
States. This has been due to the necessity of transportation along the coast
the island, before the entrance of the produce was subject to some of the
refrigeration facilities were installed in the early 1950s and one of the
the intervening weeks. However, conditions of temperature and humidity

in these areas were not good. Until about 1950, therefore, most vegetable
growers in the Island limited the facilities to a simple knowledge of the
methods essential to a successful marketing of their produce. For a number
of years a cooperative for the marketing of vegetables had been in operation
in Isabela, and in the 1950-51 marketing season facilities were shipped to
outside markets by a newly organized cooperative in Isabela. In addition,
the Puerto Rico Reconstruction Administration, in 1950, financed and assisted
in the organization of other organizations for the marketing of vegetable products.
These.

Besides this problem vegetable growers are facing the problem

relative to an insufficient knowledge of the quality of vegetables and the
general operation of marketing the produce. Lack of knowledge relative

(1) Memorandum, dated 11/1/59, from the Investigational Committee
on Puerto Rico, Washington, D.C.

Table XLII

Shipments of Vegetables from Puerto Rico
to the United States
Fiscal Years 1935-36 to 1939-40.

	: 1935-36	: 1936-37	: 1937-38	: 1938-39	: 1939-40
	: Pounds	: Pounds	: Pounds	: Pounds	: Pounds
Arrowroot	:	:	590	:	----
Avocados	610	370	320	1,160	360
Breadfruit	14,855	1,220	11,220	8,670	19,185
Cabbage	2,820	-----	-----	-----	-----
Carrots	2,300	-----	-----	-----	-----
Cassave	-----	80	-----	-----	90
Celery Root	10,372	4,300	7,270	43,350	48,100
Chayotes	37,820	42,295	42,430	90,665	129,224
Corianders	-----	10,040	33,075	43,350	48,100
Cucumbers	2,695,620	3,237,150	2,562,450	-----	-----
Cucumbers (ango-	:	:	:	:	:
la)	72	120	180	660	1,460
Dasheens	252,703	305,365	186,045	661,095	548,247
Eggplants	18,660	18,650	41,150	10,100	1,680
Ginger Root	92,971	82,310	60,180	46,725	49,714
Lerenes	1,225	1,060	80	1,290	1,480
Lima Beans	3,710	35	--	-----	5,095
Malangas	-----	-----	-----	-----	12,495
Okra	3,428	-----	67,230	1,410	-----
Onions	-----	-----	-----	-----	300
Parsley	24,555	17,925	7,850	9,930	7,979
Peas (garden)	35,175	680	5,645	-----	-----
Peppers	312,305	168,230	78,255	21,285	67,555
Peppers (Small)	2,465	4,980	68,485	52,710	73,425
Pigeon Peas	142,205	179,610	209,505	227,665	250,410
Plantains	110,195	660	227	-----	-----
Potatoes	24,600	1,550	-----	-----	500
Pumpkins	202,518	-----	-----	-----	-----
Quenepas	4,971	3,430	-----	8,200	19,275
Squash	149,150	396,040	22,979	7,645	8,090
String Beans	122,395	56,475	61,185	335	52,540
Sweet Corn	650	-----	-----	-----	450
Tomatoes	112,175	114,095	169,625	230,160	1,080,805
Yams	502,285	462,195	438,513	624,385	600,619
Yucca	390	-----	-----	1,680	-----
Mixed	18,915	16,580	9,890	8,635	6,780

Source: Bureau of Entomology and Plant Quarantine, United States Department of Agriculture.

to diseases and absence of industriousness on the part of the growers have most of the times been held responsible for the low quality of the vegetables produced. Seasonality of the vegetable business and poor marketing methods, on the other hand, account for the failure to operate most co-operatives on an efficient basis.

The fact that the best time to ship vegetables from the Island coincides with that of Cuba has been held also responsible for the actual situation prevailing in vegetable production. This situation has been further aggravated by the loss of most of the tariff protection this production had enjoyed before reductions were granted to Cuba through the federal trade agreement of 1934. Unless such concessions are removed and Cuban competition is eliminated or reduced substantially, the vegetable industry holds very little more chance of expansion.

E. Sea-Island Cotton.

Sea-Island cotton as a commercial export commodity was more important to the Island's economy in the past than in the present. Despite the wide variations in its importance to insular economy this high-grade fiber seems to hold a good future either for export or for purposes of elaboration in the Island. The highest peak in the exportation of this commodity was reached in 1930-31 when 1,742,385 pounds were shipped to outside markets at a value of \$713,342 (this figure includes exportation to foreign countries which are truly re-exports). Production of the commodity was interrupted in 1933 and again in 1934 due to low prices, which forced the San Juan Ginnery, the only purchaser of native cotton, to abandon operations, and to the attack of the pink bollworm. In 1935, due to the stimulus of the F.E.R.A. and the organization of a cooperative of

producers in Isabela, more than 600 acres were harvested on the northern coast, and in 1936 an estimated 2,000 acres were planted in this section. In 1935-36, 145,406 pounds of cotton were exported from the Island at a value of \$32,153.

By 1939, the planting of Sea-Island cotton in Puerto Rico had become again an important agricultural enterprise, and all indications are that it will continue to increase in importance in the future. A total of 3,344 acres were planted in 1939 as compared to 2,049 in 1938. Exports to the United States reached their peak level in 1939-40 since 1930-31, when 312,992 pounds of raw cotton at a value of \$105,313 were shipped. The outbreak of the actual war has interrupted shipments to foreign countries.

F. Other Minor Crops.

Food crops for local consumption have decreased very little in acreage since 1899. It is estimated that in this last year corn, rice, sweet potatoes, yams, bananas, and other crops (mainly home-grown food-stuffs) occupied approximately 197,410 acres or 41 per cent of the cultivated lands. During the 20th century food crops increased in acreage, reaching 276,156 acres in 1929, including those intercropped and planted in rotation with other food or commercial crops. In 1935, however, the acreage devoted to this type of cultivation decreased to 180,801 acres and occupied about one-fourth of the cropland harvested during that year. This means that food crops in general have lost importance since 1899. This, no doubt, is due to the greater profitability found in other types of cultivation.

producers in Iceland, some 200 acres were harvested on the mainland, and in 1935 an estimated 3,000 acres were planted in this section. In 1935-36, 145,400 pounds of coffee were exported from the island at a value of \$35,137.

By 1935, the planting of tea-land coffee in Puerto Rico had become again an important agricultural enterprise, and all indications are that it will continue to increase in importance in the future. A total of 1,344 acres were planted in 1935 as compared to 2,043 in 1934. Exports to the United States reached their peak level in 1935-36 since 1930-31, when 212,992 pounds of raw coffee at a value of \$102,312 were shipped. The outbreak of the actual war has interrupted shipments to foreign countries.

7. Other Minor Crops.

Food crops for local consumption have decreased very little in acreage since 1932. It is estimated that in this last year corn, rice, sweet potatoes, yams, bananas, and other crops (mainly home-grown food-stuffs) occupied approximately 107,419 acres or 41 per cent of the cultivated lands. During the 1935 century food crops increased in acreage, reaching 278,186 acres in 1935, including those interrupted and planted in rotation with other food or commercial crops. In 1935, however, the acreage devoted to this type of cultivation decreased to 180,801 acres and occupied about one-fourth of the acreage harvested during that year. This means that food crops in general have lost importance since 1932. This, no doubt, is due to the greater profitability found in other types of cultivation.

The principal minor crops grown in the Island of Puerto Rico for local consumption are rice, beans, corn, peas, Irish and sweet potatoes, yams, yautias, yuccas and others. The Island produces but a small amount of rice. Approximately 9,400 acres were planted in the year 1935, with an average production of nearly 500 pounds per cuerda. The type produced in the Island is that known as "upland" rice whose yield is much lower than that of "lowland" rice. Most of it is produced in the southeastern section of the tobacco zone which is very humid. It is grown in the same fields previously devoted to tobacco, and frequently is intercropped with other food crops.

A considerable number of acres of land in Puerto Rico are also devoted to bean growing. This product is usually grown by the small tobacco growers and intercropped with corn after the tobacco harvest. It is extremely sensitive to drought or heavy showers, rendering its production very risky. Its yield is very low, ranging from 200 to 600 pounds per cuerda. Difficulties of storing the beans after a successful harvesting period result very frequently in low prices to growers. This storage problem has been difficult to solve due to the fact that beans are produced over an extensive area on small farms dispersed all over the Island, each small farm producing small quantities, part of which is consumed at home. This difficulty is further aggravated by the seasonal character of the production of beans.

Corn acreage, on the other hand, bears close connection to the total number of acres devoted to tobacco cultivation. In 1935, 50,000 cuerdas were devoted to this type of production in the Island, against 70,000 and 59,000 cuerdas cultivated respectively in the years 1930 and

1920. Cultivation of this product is carried on differently in each section of the Island where it is grown. In the tobacco zone it is planted after the tobacco is harvested, usually intercropped with beans. In the southeastern coast of the Island, on the other hand, it is cultivated by large landowners in relatively extensive areas. Moreover, corn is planted on small farms which do not cultivate tobacco, in small patches as feed for live-stock and for limited home consumption.

Total acreage devoted to the production of dry peas, potatoes, yams, yautias, yuccas and other crops, aggregated 90,225 acres in 1935, or approximately 50 per cent of the total acreage in food crops that year. These crops produced a return of \$1,512,500 to Puerto Rican growers in 1935, as against \$1,425,000 returned by rice, corn, and beans. (1)

(1) Refer to Table X, Page 50.

1930. Cultivation of this product is carried on differently in each section of the island where it is grown. In the tobacco zone it is planted after the tobacco is harvested, usually intercropped with beans. In the southeastern coast of the island, on the other hand, it is cultivated by large landowners in relatively extensive areas. Moreover, corn is planted on small farms which do not cultivate tobacco; in small patches as food for five-acres and for limited home consumption. Total acreage devoted to the production of dry peas, potatoes, yams, yautia, yuca and other crops, aggregated 80,725 acres in 1935, or approximately 50 per cent of the total acreage in food crops that year. These crops produced a return of \$1,517,500 as Puerto Rican crops in 1935, as against \$1,428,000 returned by rice, sugar, and banana. (1)

CHAPTER VIII

MANUFACTURESA. Importance of Manufactures in Insular Economy.1. Employment and Wages.

The manufacturing and mechanical industries in Puerto Rico rank second to agriculture in the number of persons employed, but are exceeded by both agriculture and trade in the amount of income produced. In 1936-37, manufacturing, including construction, was responsible for about one-fourth of the total income from productive industries. Manufacturing, however, is only about one-third as important as agriculture from the viewpoint of income produced, although nearly 40 per cent as important from the viewpoint of number of persons reporting gainful occupations. Of 522,825 people gainfully occupied in the Island in 1935, 132,315--25.3 per cent--were in the manufacturing and mechanical industries. Nearly 70 per cent of all the persons reporting gainful occupations during this year were in the clothing and needlework trades, 15 per cent in the cigar and tobacco factories, and about 7 per cent in the sugar mills and refineries.

Representative data of actual weekly earnings for all industrial occupations on the Island are not available. Some statistics, however, have been compiled by the Insular Department of Labor showing actual average weekly earnings in a group of selected industrial occupations in the year 1939-40 (see Table XLIII). The highest actual average earning among this group is paid to male workers in the hair net factories, and the lowest in the fruit packing industry. The actual average weekly earning for female workers is highest in the precious stone cutting and polishing industry, but, again, as is true with male workers, they also receive their lowest pay in the fruit packing industry.

1. Importance of Manufacturing in Island Economy

2. Employment and Output

The manufacturing and mechanical industries in Puerto Rico have increased in importance in the number of persons employed, but are still second to agriculture and stock raising in the number of income produced. In 1928-29, manufacturing, including construction, was responsible for about one-fourth of the total income from productive activities. Manufacturing, however, is only about one-third as important as agriculture from the viewpoint of income produced, although nearly 50 per cent as important from the viewpoint of number of persons reporting annual production. Of the 12,000 persons principally employed in the island in 1928, 12,000-13,000 per cent were in the manufacturing and mechanical industries. Nearly 70 per cent of all the persons reporting annual production during this year were in the clothing and millwork trades, 10 per cent in the sugar and tobacco trades, and about 7 per cent in the other minor and miscellaneous trades.

Representative data of actual output available for all industrial occupations on the island are not available. Some estimates, however, have been compiled by the Bureau of Economic Affairs of the Government of Puerto Rico in a group of statistical publications in the year 1927-28 (see Table XIII). The highest annual average output for this group is said to have occurred in the first half of 1927, and the lowest in the third half of 1927. The annual average output for the group is said to have been 10 per cent higher than the output for the first half of 1927, and 10 per cent lower than the output for the third half of 1927. The annual average output for the group is said to have been 10 per cent higher than the output for the first half of 1927, and 10 per cent lower than the output for the third half of 1927.

Table XLIII

Summary of Hour and Weekly Wages and Working Hours Per Week
 Averaged in Varied Number of Establishments
 And Farms In The Most Important Industries,
 1939-40.

Establishment, Factory, Plant or Field Industries	Averages					
	Full Time		Earnings		Actual Earnings	
	Hours Per Week		per Hour		per Week	
	Males	Females	Males	Females	Males	Females
Alcohol	48.9	----	.223	----	\$8.09	\$----
Bed and Bedsprings	48.0	----	.142	----	6.21	----
Breweries	48.3	----	.209	----	8.20	----
Building Trades	47.7	----	.215	----	7.90	----
Buttons (Shell)	41.6	41.2	.342	.298	12.41	9.75
Cigars	48.0	48.0	.142	.153	5.60	4.82
Coffee Crushing Mills	52.3	48.0	.176	.125	8.06	3.00
Coffee Roasting	47.9	48.0	.166	.125	6.97	4.50
Electric Plants	53.0	----	.266	----	13.77	----
Fertilizers	47.0	----	.266	----	7.15	----
Foundry & Machine Shops	50.4	----	.26	----	11.65	----
Fruit Canning	48.0	48.0	.13	.119	2.57	3.07
Fruit Packing	48.0	48.0	.102	.057	1.12	0.45
Furniture	46.7	----	.141	----	5.91	----
Hair Nets	44.0	43.7	.359	.211	15.80	7.49
Hats	43.0	42.9	.316	.238	10.75	8.07
Liquor Manufacturing and Bottling	45.8	44.6	.210	.226	7.99	6.68
Mattress, Quilt & Pillow	47.0	47.2	.206	.178	7.95	5.55
Needlework:						
Children's garments	41.1	42.1	.282	.180	2.79	5.07
Gloves	40.0	40.0	.275	.299	11.00	8.85
Handkerchiefs & Art Lin.	42.0	41.8	.223	.198	6.40	5.41
Men's Shirts	47.9	46.7	.171	.143	8.02	3.31
Men's Suits	45.0	47.6	.202	.161	6.86	5.65
Pants	45.9	44.4	.172	.136	6.95	4.25
Women's Dresses	42.1	41.0	.3103	.222	13.31	7.90
Women's Underwear	43.7	42.1	.201	.159	6.10	4.79
Paper Boxes	47.3	44.0	.200	.141	9.02	4.34
Precious Stone Cutting & Polishing	40.0	40.0	.300	.307	11.49	11.80
Shoe Manufacturing and Repairing	48.0	----	.103	----	4.63	+
Sugar Factories	55.7	48.6	.308	.272	10.56	1.70
Sugar Refineries	48.7	42.0	.306	.298	8.63	3.64
Tin Cans	48.0	----	.150	----	7.69	----
Tobacco Stripping	48.1	48.0	.133	.123	5.11	4.14
Truck Gardening	48.1	48.7	.072	.056	1.56	1.52
Wooden Boxes	48.0	----	.373	----	9.61	----
Wharves	44.6	----	.512	----	4.02	----

Source: Compiled from Annual Report of the Governor of Puerto Rico, 1939-40.

2. Exports of Manufactured Goods.

The increasing importance of manufacturing in the Island is illustrated by the manufactures entering exterior trade. During the five-year period 1913-17 manufactured goods sold to the Mainland averaged approximately \$6,815,000 annually, or 14 per cent of total sales. From 1923 to 1927, manufactures averaged \$14,451,000 annually, or 17 per cent of all sales; and by the 1933-37 period these goods had grown to an average of approximately \$28,330,000 annually or 30 per cent of all sales.

Table XLIV on the opposite page, gives the exports of a selected group of goods manufactured or processed annually in Puerto Rico for the years 1935 to 1940, inclusive. The table shows a distinct downward trend in the exports of canned grapefruit since 1935-36, and of canned pineapples since 1936-37. Citrons in brine show an increasing tendency whereas other fruit preparations show a substantial drop in the year 1939-40. Exports of molasses have decreased from a high of \$2,098,800 in 1934-35 to \$713,400 in 1939-40, or a drop of about 66 per cent, whereas the exportation of refined sugar shows a distinct upward trend.

There has also been a significant development in connection with tobacco manufactures. The value of cigars and cigarettes manufactured in the last five years is considerably below that of earlier years, owing principally to reduced prices, a shift in consumer's taste from cigars to cigarettes, and the increasing preference on the part of Puerto Ricans for American-produced cigarettes. The drop in cigar exports, as shown by the table, has been far more drastic than that which has occurred in the exportation of cigarettes produced in the Island.

Cotton garment manufacturing and allied industries have shown a substantial decrease since 1936-37. The trend up to this year was definitely

The increasing importance of manufacturing in the Island is illustrated by the manufacturing output figures for the five-year period 1951-55. Manufacturing output rose to the highest average annual level of \$2,000,000 annually, or 14 per cent of total sales. From 1951 to 1955, manufacturing averaged \$1,450,000 annually, or 12 per cent of all sales, and by the 1951-55 period these figures had grown to an average of approximately \$2,000,000 annually or 14 per cent of all sales.

Table XIV on the opposite page, gives the exports of a selected group of goods manufactured or processed in the Island for the years 1951 to 1955, inclusive. The table shows a slight increase in the exports of certain commodities since 1951-55, and of certain commodities since 1951-55. Figures in this table show an increasing tendency towards other than fruit products. A substantial drop in the year 1952-53. Exports of bananas have decreased from a high of \$2,750,000 in 1951-52 to \$1,750,000 in 1952-53, or a drop of about 36 per cent. However, the percentage of total exports shows a distinct upward trend.

There has also been a significant development in connection with tobacco manufacturing. The value of tobacco and cigarette manufacturing in the last five years is considerably higher than of earlier years, owing partly to the fact that a shift in demand has taken place from cigars to cigarettes, and the increasing preference on the part of tourists for American-produced cigarettes. The drop in cigar exports, as shown by the table, has been far more drastic than that which has occurred in the case of cigarettes. The value of cigarette exports in the Island.

Bottom figures manufacturing and allied industries have shown a substantial increase since 1951-55. The trend up to this year was definitely

Table XLIV

Exports of Goods Manufactured or Processed in Puerto Rico, 1935-1940.
(in thousands of dollars)

	1934-35	1935-36	1936-37	1937-38	1938-39	1939-40
Prepared Fruits:	:	:	:	:	:	:
Canned Grapefruits	:\$ 479.7	:\$ 522.8	:\$ 591.1	:\$ 519.1	:\$ 170.5	170.1
Canned Pineapples	: 131.9	: 123.4	: 266.4	: 166.5	: 142.7	: 229.4
Citrons in Brine	: 34.4	: 32.3	: 49.7	: 37.7	: 39.5	: 60.3
Other	: 12.2	: 12.2	: 7.5	: 22.3	: 15.5	: 5.0
Molasses	: 2,098.8	: 1,541.4	: 1,210.6	: 1,215.8	: 633.9	: 713.4
Refined Sugar	: 7,922.6	: 9,915.1	: 11,172.0	: 9,697.5	: 9,352.8	: 15,872.0
Tobacco Manufactures:	:	:	:	:	:	:
Cigars	: 1,324.3	: 1,096.9	: 953.7	: 218.9	: 38.3	: 40.3
Cigarettes	: 32.9	: 18.5	: 23.9	: 24.6	: 27.0	: 21.1
Other	: 1.6	: 1.5	: 2.3	: 1.1	: 1.2	: 1.7
Cotton Manufactures:	:	:	:	:	:	:
Wearing Apparel	: 11,645.5	: 14,457.7	: 16,688.8	: 7,595.6	: 6,269.1	: 4,005.1
Handkerchiefs	: 937.5	: 934.2	: 1,286.8	: 1,665.6	: 2,677.5	: 3,260.8
Other	: 460.3	: 509.5	: 691.8	: 370.1	: 265.2	: 910.5
Silk Manufactures	: 174.8	: 450.3	: 1,222.9	: 1,310.6	: 2,661.3	: 3,214.0
Linen Manufactures	: 1,199.3	: 1,190.9	: 868.1	: 577.4	: 2,605.9	: 4,341.1
Alcohol	: 322.8	: 507.3	: 559.5	: 507.3	: 393.5	: 516.9
Rum	: -----	: 1,040.0	: 2,029.0	: 3,199.0	: 3,197.0	: 5,568.0
Bay Rum	: 7.3	: 7.5	: 3.3	: 5.7	: 11.0	: 9.9
Buttons	: 3.8	: 65.4	: 93.6	: 152.5	: 303.2	: 459.9
Hats of Straw or	:	:	:	:	:	:
Fiber	: 312.3	: 340.3	: 349.2	: 275.2	: 251.6	: 257.2

Source: Compiled from Annual Reports of the Governor of Puerto Rico.

upward but after then the industry was adversely affected by tariff concessions to competing foreign countries under reciprocal trade agreements.

This, and the influence of continental business conditions and style changes, together with the effects of recent wage and hour legislation, make the future of the industry uncertain. Wearing apparel has been the item most hard hit, its exports having declined from nearly 17 million dollars in 1936-37 to only about 4 million dollars in 1940. Cotton handkerchiefs, however, have increased since 1935-36 from about \$934,200 to over \$3,200,000.

Silk and linen manufactures, as indicated by the table, have shown a substantial increase since 1934-35. Exports of silk manufactures have progressed steadily upward, but those of linen manufactures have shown a definite

decline up to 1938, after which they began to increase again. The manufacture of straw or fiber hats is scarcely holding its own, and the same is true of bay rum manufacture.

The manufacture of alcohol and rum has shown a considerable increase which may account in part for the failure of molasses to show expansion. Rum exports have increased since 1936 from \$1,040,000 to about \$5,568,000. The manufacture of buttons has been significant during the whole period, and definitely shows an increasing curve. Exports have increased since the beginning of the period from about \$4,000 to about \$460,000.

The great bulk of these manufactured goods is sent to continental United States. Some textile fibers and manufactures are, however, exported to Brazil, Dominican Republic, Netherland West Indies (Curacao), Venezuela and Colombia. Vegetable food products and molasses are also exported to Canada, Dominican Republic, Netherland West Indies (Curacao), Panama, Venezuela, and other countries.

B. Nature and Types of Manufacturing Industries that have Developed in Puerto Rico.

In Puerto Rico, the average amount of mechanical equipment per worker is very low as contrasted with that of the Mainland, and income created fluctuates with the tools and instruments with which workers are equipped as well as with the nature of the mechanical processes employed. Much of the manufacturing done in the Island is of the handwork type-- principally in the needlework and clothing trades, and in those industries which produce for sale in the local market. However, many of the industries produce for sale in both local and Mainland markets. Roughly about one-half of the textile and rum output and about one-third of the refined sugar is consumed locally. Other manufacturing concerns produce almost exclusively

to provide for local needs, using either local or outside material or both.

In Puerto Rico those industries have thrived which: (1) are essential to the processing of agricultural products, (2) have always counted with a sure market and cheap and abundant raw materials, (3) rely primarily on hand labor and make relatively little use of tools and machinery, and in which labor cost constitutes the most important item in total costs, (4) have been able to function economically in limited scale for the local market, and (5) have enjoyed tariff protection.

The most important manufacturing industries which are considered essential to the processing of agricultural products are, fruit canning and packing, coffee crushing and roasting, sugar refining, and cigar and cigarette making. Each of these major industries actually can count upon an abundant and cheap supply of raw materials, but none of them, with the exception of the sugar industry, could be said to have a sure market. Though it is true that canned fruits, cigars and cigarettes are sold in the continental protected markets, these products, because of competition from other areas and other conditions, actually depend upon a market surrounded with uncertainty. Coffee, on the other hand, remains almost purely a local product, and though a substantial portion of the product is sold in the local market, most of it has to be exported to outside markets under payment of subsidy.

Cheap labor--or the anticipation of profiting by a cheap labor supply--accounts largely, if not entirely, for the movement into the Island of a great number of handicraft industries, among which are the following: the cutting and polishing of diamonds, the setting of jewels in time pieces, the making of hats from imported straw or fibers, the stemming, or stripping,

to provide for local needs, being without local or outside markets as

well.

In 1900 the three industries were divided which: (1) are

essential to the processing of agricultural products, (2) have always

remained with a small market and cheap and abundant raw materials, (3) rely

primarily on local labor and have relatively little use of tools and ma-

chinery, and in which labor was concentrated in the past; and (4) is

capital costs, (4) have been able to function satisfactorily in limited ways

for the local market, and (5) have required little protection.

The most important manufacturing industries which are considered

essential to the processing of agricultural products are, first, milling

and packing, coffee roasting and roasting, sugar refining, and other

chemicals. Each of these major industries usually has a small

as abundant and cheap supply of raw materials, and none of them, with the

exception of the sugar industry, could be said to have a small market.

Though it is true that certain fruits, sugar and other products are sold in the

continent, processed products, which are sold in the continent from

other areas and other countries, are sold in the continent from

with exception. Cotton, for example, is sold in the continent from

product, and through a number of parties in the process of sale in the

local market, most of it has to be exported to other markets before

of locally.

Cheap labor--the attraction of labor by a cheap labor

supply--remains largely, if not wholly, the reason why the island

of a great number of manufacturing industries, many of which are the

the output and sale of products, the output of goods is then

the making of goods from imported raw materials, and machinery, or

of imported tobacco for shipment to the Mainland, making mother-of-pearl and other buttons from imported materials, and the handicraft divisions of the needlework industry, especially handkerchief rolling and embroidery, and a limited amount of sewing. Most of these industries rely primarily on hand labor and make relatively little use of tools and machinery. Most of the labor employed by these industries is applied not to the natural resources of the Island but to materials brought in from the outside which are shipped out again after some value has been added by handicraft. Since these materials and the handwork done thereon have a high value in relation to volume, the freight costs from the Mainland to the Island and back are low relative to market price. Among these handicraft industries, the needlework industry is by far the most important both in terms of number of persons employed, and of value added by processing or manufacture. Unfortunately, this industry has lost most of its importance in insular economy owing to the application of the provisions of the Fair Labor Standards Act and other conditions to which reference shall be made in Section C-3 of this chapter.

Among those industries which have been able to operate economically in a limited scale for local markets are found those which produce perishable goods or turn out articles which come to satisfy some peculiar demand or need of the people, and those producing goods for which there exists a special demand, or which, because of the high costs of transportation involved, remain local in character. Baked goods, printing, furniture, and iron and steel work are examples of the former; and soft drinks, cosmetics, soap, and perfumery are goods for which a special demand exists; and floor tiles, mosaics, brick, ice and lime are items in which transportation costs are high.

at present because the majority of the population, being of-
and other factors from various sources, and the historical situation
of the country, especially in the case of the population, and
and a limited amount of land. The land is not fertile and
on land labor and other factors are not so well developed. The
of the labor employed by these industries is not so high as in the
industries of the island but the materials brought in from the outside world
are shipped out at a high price and the value added by manufacturing. These
these materials and the industry from which they have a high value in relation
to volume, the freight costs from the island to the island and back are
low relative to other prices. Among these industries are the sugar
work industry is by far the most important both in terms of number of workers
employed, and of value added by manufacturing or manufacturing. The sugar
into industry has lost much of its importance as a major source of income for
the application of the provisions of the 1911 Act. The industry has not
conditions in which it will be able to make its share of the total
among these industries which have been able to operate successfully
is a limited scale for local markets and for those which produce goods
able goods or buy and sell for which they are able to produce goods
or need of the goods. The industry from the island is not a
special demand, in which, because of the high cost of transportation involved,
remain local in character. These goods, including, furniture, and iron and
steel work are examples of the former and the latter, respectively, and
and particularly are goods for which a special market exists and for which
materials, such as iron and steel, are not so well developed as in the

Tariff protection has been also an important factor influencing the establishment of industries in Puerto Rico. Since the Island is included in the domestic United States market, it has practically unlimited duty-free entrance to the Mainland for its products. As most of the items it sells are not produced in sufficient quantities in the Mainland to supply continental needs, Puerto Rico has been able to sell its industrial output under almost full tariff protection. Among the industries enjoying these tariff privileges are the sugar industry, tobacco manufactures, the fresh fruit and canning industry.

C. The Most Important Industries in the Island.

1. The Sugar Industry.

Sugar is the most important industry in the island of Puerto Rico. Sugar sales usually are responsible for about seventy-five per cent of Puerto Rico's income from exterior sources after adjusting needlework sales for the value of the goods sent from continental United States. Sugar growing and processing comprise such a substantial part of the Island's economy that business activities fluctuate up and down with sugar output and prices. Indeed, Puerto Rico's reliance on sugar is everyday greater despite all efforts to find other industries to supplement the income received from it. This increasing dependence on sugar is not merely due to expansion of the sugar industry but to its increasing importance as a source of income and employment resulting from the lesser importance of other crops and industries--coffee, tobacco, fruits, and needlework--in insular economy. Puerto Rico's dependence on this product is illustrated by the fact that not one of the States producing sugar obtains as much as 15 per cent of its income from sugar cane or beets, whereas sugar cane provides 60 per cent of Puerto Rico's agricultural income. Moreover, scarcely a merchant, or professional

Tariff protection has been also an important factor influencing

the establishment of industries in Puerto Rico. Since the Island is included in the domestic United States market, it has practically unlimited duty-free entrance to the mainland for its products. In most of the items it sells are not produced in sufficient quantities in the mainland to supply continental needs, Puerto Rico has been able to sell its industrial output under almost full tariff protection. Among the industries enjoying these tariff privileges are the sugar industry, tobacco manufacturers, the fresh fruit and canning industry.

2. The Great Industrial Revolution in the Island.

1. The Sugar Industry.

Sugar is the most important industry in the island of Puerto Rico. Sugar sales normally are responsible for about seventy-five per cent of Puerto Rico's income from export sources. Since sugar is the only commodity which the value of the goods sent into continental United States. Sugar growing and processing comprise such a substantial part of the Island's economy that business activities throughout the island with sugar output and income. Indeed, Puerto Rico's reliance on sugar is so deep that sugar has been all efforts to find other industries to supplement the income received from it. This increasing dependence on sugar is not merely due to expansion of the sugar industry but to its increasing importance as a source of income and employment resulting from the heavy dependence of other crops and industries--coffee, tobacco, fruit, and handicrafts--on similar equipment. Puerto Rico's dependence on this product is illustrated by the fact that not one of the States producing sugar exports as much as 15 per cent of its income from sugar cane or beets. Although sugar alone provides 60 per cent of Puerto Rico's agricultural income, however, especially a merchant, or professional

man, or government employee is unaffected by sugar's welfare, so important is the part it plays in general business conditions, in tax collections, and in capacity of the Island's inhabitants to acquire and enjoy the everyday necessities of life. The Island's schools, colleges and university, its splendid health facilities, its roads, and indeed its whole well-being is contingent on and gravitate around the sugar industry.

A discussion of the most important phases of the sugar-growing industry in Puerto Rico has already been made in Chapter IV (see page 77). In here, the discussion is limited to an analysis of the sugar refining industry, one of the principal manufacturing industries in the Island for which sugar growing provides the basic raw material.

Table XLV

Exportation of Refined Sugar from Puerto Rico
Fiscal Years 1929-30 to 1939-40.

Fiscal Year	: Exportation to the : United States		: Exportation to : Foreign Countries		Total Exportation	
	Pounds	Dollars	Pounds	Dollars	Pounds	Dollars
1929-30	:120,283,950:	6,139,769:	95,970:	2,975	:120,379,920:	6,142,744
1930-31	:168,048,850:	7,427,068:	24,870:	819	:168,073,720:	7,427,887
1931-32	:191,589,000:	7,837,414:	40,597:	1,256	:191,629,597:	7,838,650
1932-33	:191,304,000:	7,052,491:	3,167:	165	:191,307,167:	7,052,656
1933-34	:236,637,000:	9,823,272:	-----:	-----	:236,637,000:	9,823,272
1934-35	:196,524,000:	7,922,271:	7,726:	296	:196,531,726:	7,922,567
1935-36	:225,749,000:	9,915,128:	-----:	-----	:225,749,000:	9,915,128
1936-37	:251,696,000:	11,171,980:	75:	4	:251,696,000:	11,171,984
1937-38	:211,892,000:	9,697,533:	-----:	-----	:211,892,000:	9,697,533
1938-39	:310,169,000:	9,352,767:	-----:	-----	:310,160,000:	9,352,767
1939-40	:358,004,040:	15,872,044:	-----:	-----	:358,004,040:	15,872,044
	:	:	:	:	:	:

Source: Insular Department of Agriculture and Commerce, "Annual Book on Statistics, 1939-40".

The Island's sugar refining industry has been limited by quotas upon refined sugar coming to continental United States, the refined sugar output being restricted to local consumption plus the continental quota.

and, as Government employees are not allowed to engage in business, the Government is the only one in the field in general business transactions, in the field of the island's industry to supply the necessary necessities of life. The island's schools, colleges and universities, its splendid health facilities, its roads, and indeed its whole well-being is contingent on and dependent upon the sugar industry.

A discussion of the most important phases of the sugar-growing industry in Puerto Rico has already been made in Chapter IV (see page 70). In here, the discussion is limited to an analysis of the sugar refining industry, one of the principal manufacturing industries in the island, for which sugar growing provides the basic raw material.

TABLE III

Separation of Refined Sugar from Puerto Rico
Fiscal Years 1900-01 to 1929-30

Fiscal Year	Refined Sugar (Short Tons)	Sugar (Short Tons)	Total (Short Tons)
1900-01	1,000,000	1,000,000	2,000,000
1901-02	1,100,000	1,100,000	2,200,000
1902-03	1,200,000	1,200,000	2,400,000
1903-04	1,300,000	1,300,000	2,600,000
1904-05	1,400,000	1,400,000	2,800,000
1905-06	1,500,000	1,500,000	3,000,000
1906-07	1,600,000	1,600,000	3,200,000
1907-08	1,700,000	1,700,000	3,400,000
1908-09	1,800,000	1,800,000	3,600,000
1909-10	1,900,000	1,900,000	3,800,000
1910-11	2,000,000	2,000,000	4,000,000
1911-12	2,100,000	2,100,000	4,200,000
1912-13	2,200,000	2,200,000	4,400,000
1913-14	2,300,000	2,300,000	4,600,000
1914-15	2,400,000	2,400,000	4,800,000
1915-16	2,500,000	2,500,000	5,000,000
1916-17	2,600,000	2,600,000	5,200,000
1917-18	2,700,000	2,700,000	5,400,000
1918-19	2,800,000	2,800,000	5,600,000
1919-20	2,900,000	2,900,000	5,800,000
1920-21	3,000,000	3,000,000	6,000,000
1921-22	3,100,000	3,100,000	6,200,000
1922-23	3,200,000	3,200,000	6,400,000
1923-24	3,300,000	3,300,000	6,600,000
1924-25	3,400,000	3,400,000	6,800,000
1925-26	3,500,000	3,500,000	7,000,000
1926-27	3,600,000	3,600,000	7,200,000
1927-28	3,700,000	3,700,000	7,400,000
1928-29	3,800,000	3,800,000	7,600,000
1929-30	3,900,000	3,900,000	7,800,000

The island's sugar refining industry has been limited by Government action to a certain number of refineries. The refined sugar output being restricted to local consumption plus the export trade.

Despite these restrictions this industry has been able to hold its ground in the continental markets. Exportation of refined sugar gravitated around the \$7,000,000 mark figure between 1929 and 1933, increased to about 10 million dollars in 1933-34, dropped in 1934-35, increased to a high of over 11 million dollars in 1936-37, declined in 1937-38 and 1938-39, and reached a peak level of approximately 16 million dollars in 1939-40 (see Table XLV). This last increase was due to the temporary suspension of quotas on refined sugar in the latter part of 1939.

2. Tobacco Manufactures.

Three different types of tobacco products are manufactured in Puerto Rico: cigars, cigarettes, and chewing tobacco. The chewing tobacco is in the form of "rolls" made either domestically or in small factory units, where female workers twist the tobacco into rope form which is then put up in rolls. Retailers purchase this product by the roll and sell it on the basis of inches, charging customarily one cent per inch. This tobacco, however, is relatively less important than cigars and cigarettes, and is a product of comparative small local consumption.

a. Cigars.---It seems that the Island's tobacco industry has for long hinged on the manufacture of cigars both for local consumption and export purposes. For 31 years (1906-36) during which production varied from as high as 323 millions to as low as 81 million cigars per annum, the proportion of cigars withdrawn for export to cigars withdrawn for consumption was approximately 2 to 1. Recent years show a change in this situation. In 1937 cigars consumed locally were about four times those exported, while in 1938 and 1939, only about 2 million cigars were exported against 64 and 72 million consumed domestically. The increasing preference for cheaper cigar brands, and particularly, the shift of customers' taste

toward more cigarette consumption is generally held responsible for that trend.

Tables XLVI and XLVII show the number of cigars manufactured and withdrawn for consumption or export to continental United States.

The manufacture of cigars for local consumption augmented rapidly

Table XLVI

Cigars Manufactured in Puerto Rico and Withdrawn
For Consumption And Export, 1906-39.

:Withdrawn:Withdrawn:				:Withdrawn:Withdrawn:			
Year:	for con-	for	Total	Year:	for con-	for	Total
:	sumption:	Export	Output	:	sumption:	Export	Output
:	1,000	1,000	:	:	1,000	1,000	1,000
1906 :	74,698	132,670	207,368	1923 :	75,929	162,332	238,261
1907 :	76,984	103,782	180,766	1924 :	70,019	196,560	266,579
1908 :	84,933	140,302	225,235	1925 :	108,577	214,546	323,123
1909 :	92,700	151,725	244,425	1926 :	68,647	160,805	229,452
1910 :	101,065	174,743	275,808	1927 :	63,393	147,354	210,747
1911 :	111,682	169,766	281,448	1928 :	61,330	158,781	220,747
1912 :	119,038	165,769	284,807	1929 :	55,453	145,798	201,251
1913 :	112,712	150,364	263,076	1930 :	48,494	171,458	219,952
1914 :	101,423	174,275	275,698	1931 :	43,524	122,455	165,979
1915 :	109,130	159,249	268,379	1932 :	36,547	63,039	99,586
1916 :	107,889	210,399	318,288	1933 :	32,003	65,278	97,281
1917 :	106,647	181,779	288,426	1934 :	28,530	63,193	91,723
1918 :	94,335	149,125	243,460	1935 :	28,881	52,368	81,249
1919 :	98,024	223,316	321,340	1936 :	50,047	51,237	101,284
1920 :	105,728	152,324	258,052	1937 :	62,377	15,521	77,898
1921 :	77,513	140,504	218,017	1938 :	63,861	2,021	65,882
1922 :	75,018	184,626	259,644	1939 :	71,650	2,046	73,696
:	:	:	:	:	:	:	:

Source: Insular Department of Agriculture and Commerce, "Annual Book on Statistics, 1939-40".

from 75 millions in 1906 to 119 millions in 1912, since which time the trend was downward until 1935, when it began increasing again. This late increase was accompanied by a drastic reduction in cigars exported. The rapid increase in the consumption of cigarettes from the Mainland partly explains the decline in the absolute consumption of cigars. This has depressed considerably

toward more cigarette consumption is generally held responsible for that
 trend.
 Tables XVI and XVII show the number of cigarette manufacturers and
 witnesses for consumption in regard to continental United States.
 The statistics of cigarette for local consumption augmented rapidly

Table XVI

Cigarette Manufacturers in Western Mexico and Wisconsin
 for Consumption and Export, 1900-30.

Year	for con-	for	for con-	for	Total
1900	1,000	1,000	1,000	1,000	1,000
1901	1,000	1,000	1,000	1,000	1,000
1902	1,000	1,000	1,000	1,000	1,000
1903	1,000	1,000	1,000	1,000	1,000
1904	1,000	1,000	1,000	1,000	1,000
1905	1,000	1,000	1,000	1,000	1,000
1906	1,000	1,000	1,000	1,000	1,000
1907	1,000	1,000	1,000	1,000	1,000
1908	1,000	1,000	1,000	1,000	1,000
1909	1,000	1,000	1,000	1,000	1,000
1910	1,000	1,000	1,000	1,000	1,000
1911	1,000	1,000	1,000	1,000	1,000
1912	1,000	1,000	1,000	1,000	1,000
1913	1,000	1,000	1,000	1,000	1,000
1914	1,000	1,000	1,000	1,000	1,000
1915	1,000	1,000	1,000	1,000	1,000
1916	1,000	1,000	1,000	1,000	1,000
1917	1,000	1,000	1,000	1,000	1,000
1918	1,000	1,000	1,000	1,000	1,000
1919	1,000	1,000	1,000	1,000	1,000
1920	1,000	1,000	1,000	1,000	1,000
1921	1,000	1,000	1,000	1,000	1,000
1922	1,000	1,000	1,000	1,000	1,000
1923	1,000	1,000	1,000	1,000	1,000
1924	1,000	1,000	1,000	1,000	1,000
1925	1,000	1,000	1,000	1,000	1,000
1926	1,000	1,000	1,000	1,000	1,000
1927	1,000	1,000	1,000	1,000	1,000
1928	1,000	1,000	1,000	1,000	1,000
1929	1,000	1,000	1,000	1,000	1,000
1930	1,000	1,000	1,000	1,000	1,000

Source: Bureau of Census, Statistical Abstract, 1931-32.

from 75 millions in 1915 to 115 millions in 1925, since which time the trend
 has downward until 1930, when it began increasing again. This last increase
 was accompanied by a drastic reduction in cigarette exports. The rapid increase
 in the consumption of cigarettes from the United States during the 15-
 years in the absolute consumption of cigarettes. This has happened considerably

Table XIVII

Quantity and Value of Exports of Cigars from Puerto Rico to Continental United States and Foreign Countries, 1900-1939.

Year	To United States:		To Foreign Countries:		Total		Average
	Quantity:	Value	Quantity:	Value	Quantity:	Value	Value
	(1,000):	(Dollars)	(1,000):	(Dollars)	(1,000):	(Dollars)	per 1,000
1900	11,013:	296,021:	818 :	10,094 :	11,831:	306,115:	25.87
1901	70,053:	1,543,253:	625 :	5,982 :	70,678:	1,549,235:	21.92
1902	67,243:	1,746,483:	721 :	7,332 :	67,964:	1,753,815:	25.81
1903	59,185:	1,452,784:	486 :	5,837 :	59,671:	1,460,621:	24.48
1904	87,569:	2,146,846:	392 :	5,205 :	87,961:	2,152,051:	24.47
1905	113,223:	3,069,576:	356 :	4,650 :	113,579:	3,074,226:	27.07
1906	128,826:	4,235,225:	384 :	6,185 :	129,210:	4,241,410:	32.83
1907	105,917:	3,407,747:	358 :	6,393 :	106,275:	3,414,140:	32.13
1908	141,537:	4,375,657:	(1) :	8,236 :	(1) :	4,383,893:	(1)
1909	149,469:	4,473,123:	(1) :	14,907 :	(1) :	4,488,030:	(1)
1910	174,246:	5,349,626:	(1) :	5,597 :	(1) :	5,355,223:	(1)
1911	169,484:	5,077,976:	288 :	8,735 :	169,772:	5,086,711:	29.96
1912	165,524:	5,800,162:	44 :	524 :	165,568:	5,800,686:	35.04
1913	161,093:	5,592,803:	928 :	4,473 :	162,021:	5,597,276:	34.55
1914	169,562:	6,006,680:	502 :	9,442 :	170,064:	6,016,122:	35.38
1915	156,996:	5,528,496:	178 :	3,039 :	157,174:	5,531,535:	35.19
1916	204,863:	7,834,983:	445 :	8,027 :	205,308:	7,843,010:	38.20
1917	179,038:	7,131,535:	150 :	3,158 :	179,188:	7,134,693:	39.82
1918	149,335:	6,647,621:	463 :	9,901 :	149,798:	6,657,522:	44.44
1919	226,776:	11,607,445:	251 :	6,552 :	227,027:	11,613,997:	51.16
1920	152,066:	8,101,628:	32 :	1,973 :	152,098:	8,103,601:	53.28
1921	140,457:	6,277,832:	47 :	1,222 :	140,504:	6,279,054:	44.69
1922	192,069:	6,910,735:	35 :	775 :	192,104:	6,911,510:	35.98
1923	175,251:	5,458,880:	38 :	1,239 :	175,289:	5,460,119:	31.15
1924	196,553:	7,105,313:	7 :	195 :	196,560:	7,105,508:	36.15
1925	214,546:	7,196,365:	-- :	--- :	214,546:	7,196,365:	33.54
1926	160,804:	4,227,576:	--- :	--- :	160,804:	4,227,576:	26.29
1927	144,378:	3,625,561:	--- :	--- :	144,378:	3,625,561:	25.11
1928	158,636:	3,847,797:	--- :	--- :	158,636:	3,847,797:	24.26
1929	145,566:	3,408,721:	--- :	--- :	145,566:	3,408,721:	23.42
1930	166,986:	3,899,556:	--- :	--- :	166,986:	3,899,556:	23.35
1931	122,455:	2,403,532:	--- :	--- :	122,455:	2,403,532:	19.63
1932	63,044:	1,284,289:	--- :	--- :	63,044:	1,284,289:	20.37
1933	64,992:	1,463,911:	--- :	--- :	64,992:	1,463,911:	22.52
1934	61,227:	1,322,886:	49 :	1,418 :	61,274:	1,324,304:	21.61
1935	53,297:	1,095,203:	68 :	1,767 :	53,365:	1,096,970:	20.56
1936	50,339:	951,809:	70 :	1,866 :	50,409:	953,675:	18.92
1937	12,003:	215,189:	119 :	3,673 :	12,121:	218,862:	18.06
1938	1,389:	37,602:	(1) :	736 :	-----:	38,338:	-----
1939	1,355:	39,287:	42 :	989 :	1,397:	40,276:	28.83
	:	:	:	:	:	:	:

(1) Figures not available.

Source: Department of Agriculture and Commerce, Monthly Summaries of Foreign Commerce of the U.S., and annual reports, customhouse.

Table 1711

Quantity and Value of Exports of Cigars from Puerto Rico to Continental United States and Foreign Countries, 1900-1957

Year	Quantity: Cigars	Value: Dollars	Quantity: Cigars	Value: Dollars	Quantity: Cigars	Value: Dollars
1900	11,915	128,021	48	10,702	11,937	128,118
1901	10,033	1,045,203	50	10,712	10,878	1,045,203
1902	27,283	1,742,433	123	7,032	27,702	1,742,433
1903	29,183	1,401,708	426	6,937	29,871	1,401,708
1904	27,389	2,142,027	423	7,012	27,702	2,142,027
1905	118,233	2,087,273	743	4,273	118,773	2,087,273
1906	123,733	2,230,123	502	4,103	124,273	2,230,123
1907	103,217	2,407,747	373	3,303	103,717	2,407,747
1908	121,437	4,373,637	111	3,233	121,937	4,373,637
1909	120,403	4,273,123	111	3,207	120,903	4,273,123
1910	174,243	2,123,203	111	3,207	174,743	2,123,203
1911	123,243	2,377,713	303	3,132	123,743	2,377,713
1912	123,203	2,103,103	32	3,03	123,703	2,103,103
1913	121,032	2,232,203	323	2,973	121,532	2,232,203
1914	123,123	2,003,123	303	2,923	123,623	2,003,123
1915	123,232	2,123,123	112	2,112	123,732	2,123,123
1916	140,203	4,247,243	323	2,903	140,703	4,247,243
1917	177,232	7,123,123	112	2,112	177,732	7,123,123
1918	140,203	4,247,243	323	2,903	140,703	4,247,243
1919	223,773	11,607,243	323	2,903	224,273	11,607,243
1920	123,203	2,123,123	32	2,112	123,703	2,123,123
1921	240,207	2,27,203	32	2,112	240,707	2,27,203
1922	123,203	2,123,123	32	2,112	123,703	2,123,123
1923	173,212	2,123,123	32	2,112	173,712	2,123,123
1924	123,203	2,123,123	32	2,112	123,703	2,123,123
1925	123,203	2,123,123	32	2,112	123,703	2,123,123
1926	123,203	2,123,123	32	2,112	123,703	2,123,123
1927	123,203	2,123,123	32	2,112	123,703	2,123,123
1928	123,203	2,123,123	32	2,112	123,703	2,123,123
1929	123,203	2,123,123	32	2,112	123,703	2,123,123
1930	123,203	2,123,123	32	2,112	123,703	2,123,123
1931	123,203	2,123,123	32	2,112	123,703	2,123,123
1932	123,203	2,123,123	32	2,112	123,703	2,123,123
1933	123,203	2,123,123	32	2,112	123,703	2,123,123
1934	123,203	2,123,123	32	2,112	123,703	2,123,123
1935	123,203	2,123,123	32	2,112	123,703	2,123,123
1936	123,203	2,123,123	32	2,112	123,703	2,123,123
1937	123,203	2,123,123	32	2,112	123,703	2,123,123
1938	123,203	2,123,123	32	2,112	123,703	2,123,123
1939	123,203	2,123,123	32	2,112	123,703	2,123,123
1940	123,203	2,123,123	32	2,112	123,703	2,123,123
1941	123,203	2,123,123	32	2,112	123,703	2,123,123
1942	123,203	2,123,123	32	2,112	123,703	2,123,123
1943	123,203	2,123,123	32	2,112	123,703	2,123,123
1944	123,203	2,123,123	32	2,112	123,703	2,123,123
1945	123,203	2,123,123	32	2,112	123,703	2,123,123
1946	123,203	2,123,123	32	2,112	123,703	2,123,123
1947	123,203	2,123,123	32	2,112	123,703	2,123,123
1948	123,203	2,123,123	32	2,112	123,703	2,123,123
1949	123,203	2,123,123	32	2,112	123,703	2,123,123
1950	123,203	2,123,123	32	2,112	123,703	2,123,123
1951	123,203	2,123,123	32	2,112	123,703	2,123,123
1952	123,203	2,123,123	32	2,112	123,703	2,123,123
1953	123,203	2,123,123	32	2,112	123,703	2,123,123
1954	123,203	2,123,123	32	2,112	123,703	2,123,123
1955	123,203	2,123,123	32	2,112	123,703	2,123,123
1956	123,203	2,123,123	32	2,112	123,703	2,123,123
1957	123,203	2,123,123	32	2,112	123,703	2,123,123

Let figures not available.
Source: Department of Agriculture and Commerce, Monthly Summary of Exports of the U.S., and annual reports, consolidated.

the local cigarette industry which has lost a large part of its domestic market..

In regard to the cigars manufactured for export to the Mainland, the shift from Class B (those intended to retail at over 5 cents up to and including 8 cents each) or better, to class A cigars (those intended to retail at 5 cents each or less), has been pronounced and has exerted a depressing influence on prices paid to growers. Statistics compiled by the United States Bureau of Internal Revenue show that in 1918, of tax-paid withdrawals in the Mainland of large cigars exported from the Island, Class A cigars accounted slightly less than 25 per cent of the total shipments. By 1936, the trend had changed and cigars retailing at 5 cents and less had become the most important class, accounting for around 95 or 96 per cent of the total exports.

The shift to cigar retailing at not more than 5 cents has been more marked in Puerto Rican cigars than in those manufactured in the Mainland. However, the shift in the United States has been strong enough to affect the Puerto Rican tobacco along with other types used in cigar-making. In 1920, less than 25 per cent of the Mainland production consisted of Class A cigars. The largest percentage was in Class C which accounted for almost 43 per cent of the total production. Class B cigars represented over 30 per cent. By 1922, Class A cigars had increased so rapidly that they constituted more than 80 per cent of the total production, with the balance consisting almost entirely of Class C cigars. With Class A cigars retailing at not more than 5 cents, constituting a higher and higher percentage of total manufactures, the purchases of Puerto Rican tobacco to-day are strictly dependent upon its use in this cheaper brand. This tendency in the Mainland production, like the one existing in Puerto Rico, will further depress the level of prices paid to growers.

b. Cigarettes.--The Island's cigarette industry does not seem to be of much weight in the Insular economy. Two reasons may be given to explain its secondary importance: (1) the fact that cigarettes manufactured from the types of tobacco produced on the Island have no considerable demand in outside markets, the industry having remained almost purely domestic in character, and (2) the fact that the low purchasing power of a large section of the rural population does not warrant much buying of cigarettes or of any other manufactured tobacco products.

Cigarette manufacturing on the Island reached a peak movement in 1919, when the total output was 581,549,820 cigarettes. Since this date local manufacturing discloses a descending course, so that during 1939 the total cigarettes manufactured amounted to only 79,513,820--a decline of nearly 86 per cent. This does not imply a reduction in cigarette consumption in the Island. On the contrary, the consumption of cigarettes has shown an increasing curve during the last years, having reached its highest figure on record (897.5 millions) in 1939. The rapid decrease, therefore, of local cigarette manufacturing is due not to a decrease in consumption, but to a change in the smoking habits of the Puerto Rican people, that have led to an increased use of the blended cigarettes shipped in from the Mainland. It appears that the industry is condemned to disappearance unless a cigarette is manufactured locally with the tobacco variety (bright tobacco) that suits best the consumers' taste. The possibility of producing bright tobacco in Puerto Rico, however, does not assure that the local industry will be able to snatch the local market away from the Mainland cigarettes which have already created for themselves a privileged position among consumers' tastes.

3. The Needlework Industry.

Nearly 70 per cent of all persons reporting gainful occupations in manufacturing industries in 1935 were in the clothing and needlework trades. This year's census listed 49,587 female and 552 male home needlework and embroidery workers, and 16,771 female and 1,075 male shop employees of the clothing industry (other than shirts, gloves, collars, cuffs, suits, and work clothes). More than two-thirds of the people employed in the industry work in their homes, being paid on a piece-rate basis. This work consists of actual hand sewing, hemming, and embroidery, or any other type of adornment that may be placed upon the article. The nature of such work is responsible for the fact that the industry provides the basis of employment for nearly one-half of the female workers in all gainful occupations.

a. Changes in the Needlework Trade.--Table XLVIII shows the value in millions of dollars of shipments of needlework from the Island to the continental markets during the years 1921 to 1940. As indicated by the table, the largest portion of the needlework in the Island is constituted by cotton goods. Until 1929 no textiles other than cotton textiles are separately listed in the trade statistics of the Island. The shipment of cotton goods reached a peak movement of 14.7 million dollars in 1929, declined to a little more than 10 million dollars during the depression years, reached an all-time peak of 18.7 million dollars in 1937, and declined to nearly 50 per cent that amount during 1938 and 1939. In 1940 a slight decline over 1939 is apparent. Over 7.8 million dollars worth of cotton goods were shipped this year against 9.2 million dollars in 1939.

Handkerchiefs constitute the most important item in the needlework trade of Puerto Rico. Up to 1932 only cotton handkerchiefs were listed

2. The Needlework Industry.

Nearly 70 per cent of all persons reporting regular occupations in manufacturing industries in 1935 were in the clothing and needlework trades. This year's census listed 69,507 females and 552 male home needlework and upholstering workers, and 18,771 female and 1,079 male shop employees of the clothing industry (other than shirt, blouse, collar, vest, suit, and work clothes). More than two-thirds of the people employed in the industry work in their homes, being paid on a piece-rate basis. This work consists of actual hand sewing, hemming, and embroidery, or any other type of adornment that may be placed upon the article. The nature of such work is responsible for the fact that the industry provides the basis of employment for nearly one-half of the female workers in all textile companies.

3. Changes in the Needlework Trade.--Table XLVIII shows the value

in millions of dollars of shipments of needlework from the island to the continental markets during the years 1921 to 1940. As indicated by the table, the largest portion of the needlework in the island is constituted by cotton goods. Until 1929 no textiles other than cotton textiles are separately listed in the trade statistics of the island. The shipment of cotton goods reached a peak amount of 14.7 million dollars in 1929, declined to a little more than 10 million dollars during the depression years, reached an all-time peak of 18.7 million dollars in 1937, and declined to nearly 30 per cent that amount during 1938 and 1939. In 1940 a slight decline over 1939 is apparent. Over 7.5 million dollars worth of cotton goods were shipped this year against 8.8 million dollars in 1939. Handkerchiefs constitute the most important item in the needlework trade of Puerto Rico. Up to 1932 only cotton handkerchiefs were listed

Table XLVIII

Shipments of Needlework from Puerto Rico to the Continental U.S.
(millionsof dollars)

Year end- ing June 30	Cotton						Linen			Silk			All	
	Handkerchiefs	Dresses, Skirts, Waists	Children's Dresses	Women's Underwear	Nightgowns and Pajamas	All others	Handkerchiefs	All others	Total	Dresses	Underwear	All others	Total	Grand Total
1921									2.3					2.3
1922									3.8					3.8
1923									6.3					6.3
1924	.3	6.8 ^{a/}							7.1					7.1
1925	.8	4.9							5.7					5.7
1926	1.2	6.8				.2			8.2					8.2
1927	.9	8.1				.1			9.0					9.0
1928	1.3	6.2				1.4			8.9					8.9
1929	1.1	12.9				.8			14.7					15.0
1930	1.2	3.0	1.4	6.4		.6			12.5	.2				13.2
1931	.8	2.9	1.6	7.3		.7			13.2	.2				14.0
1932	1.1	1.8	1.0	4.7	.7	1.0	.2	.2	10.3	.4	.9	.1	.4	1.3: 12.0
1933	1.1	1.5	1.5	2.7	2.7	.9	.6	.1	10.4	.7	.5	.3	-	.8: 12.0
1934	1.0	2.0	2.0	2.6	4.8	.9	1.0	.2	13.2	1.2	.2	.1	-	.3: 14.8
1935	.9	2.5	2.1	.2	6.4	.9	1.0	.2	13.0	1.2	.1	.0	-	.2: 14.4
1936	.9	4.2	2.0	.3	7.2	1.3	1.1	.1	15.9	1.2	.3	.1	-	.5: 17.5
1937	1.3	4.3 ^{c/}	3.8	.6	7.3	1.4	.7	.1	18.7	.9	.9	.3	-	1.2: 20.8
1938	1.7	1.8 ^{c/}	1.0	.7	3.7	.8	.6	.0	9.6	.6	.1	.8	.5	1.3: 11.5
1939	2.7	.7 ^{b/}	1.7	.6	3.0	.6	2.4	.2	9.2	2.6	.5	2.0	.2	2.7: 14.5 ^{d/}
1940	3.3	.2	1.6	.8	1.4	.6	3.8	.5	7.8	4.3	.5	2.4	.4	3.2: 15.4

Source: P.R. Department of Agriculture and Commerce, "Annual Book on Statistics, 1939-40."

^{a/}This figure includes wearing apparel for men and boys.

^{b/}This figure includes blouses.

^{c/}This figure includes children's underwear.

^{d/}The value of shipments of needlework from Puerto Rico to the continental United States for the calendar year 1939 was 15.1 million dollars, indicating a further recovery during the last half of 1939.

in the trade statistics of the Island. In 1932, the first shipment of linen handkerchiefs was made and aggregated nearly \$200,000 in value. This trade increased gradually until 1936 when it experienced a sharp decline in 1937 and 1938, but recovered to more than triple its previous high in 1940. The trade in cotton handkerchiefs does not show so violent fluctuations. Statistics show a slight drop during the years 1935 and 1936, but a peak level of over 3 million dollars reached in 1940.

Next to handkerchiefs the most important item in the needlework trade of the Island has been women's and children's dresses, shirtwaists, and underwear. No separate analysis can be made in this trade before 1929, since cotton goods were not listed separately up to that year. Since 1930, however, separate trends may be indicated for each one of the items. Women's dresses, skirts and waists show a drop from 3 million dollars in 1930 to 1.5 million dollars during the depression, a recovery of 4.3 million dollars in 1937, and a decline to \$240,000 in 1940. Children's dresses increased steadily after 1930, dropped slightly during the depression year 1932, recovered rapidly since, reaching a peak movement of 3.8 million dollars in 1937, but dropped to 1.6 million dollars in 1940. The shipment of cotton nightgowns and pajamas increased progressively from \$700,000 in 1932 to a high of 7.3 million dollars in 1937, but has declined since then to a low of 1.4 million dollars reached in 1940. The value of all cotton goods shipments dropped from 18.7 million dollars in 1937 to 7.8 million dollars in 1940.

b. Factors That Have Adversely Affected the Industry Since 1930.--

Though the depression of 1930-33 has been the most important factor adversely affecting the value of needlework shipped from the Island to the Mainland, considerable attention must be given to a number of events, in

addition to the depression, which occurred during 1933-38, and which accounted for the most recent difficulties experienced by the industry. The decline in needlework sales from Puerto Rico between 1936 and 1938 seems to have been the result of a combination of conditions. The principal ones were: (1) the National Recovery Act of 1934, (2) shipping strike in Puerto Rico during January and part of February, 1938, (3) the trade agreement with Switzerland in 1936, (4) the Insular Minimum Wage Law of 1919, and (5) the Fair Labor Standards Act.

In 1934, under the National Recovery Administration, the needlework industry of the Island was put under a code. Due to the long time spent in working out and discussing the code, operators in the Mainland, afraid of the possible consequences such application might have on their interests in the Island, established contacts with producers of the Philippines, China, the Azores and other areas where such limitations are lacking, to which they transferred their business so that actually they are not entirely dependent on the Island as a source of supply.

During the whole month of January and early part of February of 1938, all ports of the Island were locked by strike so that no goods could be brought in or sent out of Puerto Rico. The needlework industry was temporarily tied up due to the fact that finished goods could not be sent back to the Mainland and new merchandise could not be brought into the Island for elaboration. This standstill may have had a longer effect upon the industry in that continental operators, under the belief that the Island could no longer be relied upon for a regular and prompt return of finished goods, shipped their material to other areas whose stability could be depended upon for rapid elaboration.

Under the Reciprocal Trade Agreement with Switzerland, the import duties on certain embroidered articles and upon machine-made handkerchiefs were lowered. These concessions were extended to all other countries with which the Mainland had "favored nation" treaties, including China and Japan. As a result of this fact and the depreciation of Chinese currency, stimulation was given to United States imports of ornamental linen handkerchiefs from China. The Island was deprived of about one million dollars in needlework sales in both 1937 and 1938, as a result of the concessions made under this trade agreement to China.

On March 29, 1937, an Insular Minimum Wage Law (Act No. 45) of June 9, 1919 which, on February 25, 1924, had been ruled unconstitutional, as a result of a reversion of the United States Supreme Court on March 29, 1937, was made again applicable to female workers in the different industries. This law provided a minimum wage of \$4.00 weekly for female workers under eighteen years of age and \$6.00 per week for female workers over that age. The decision of the United States Supreme Court came at a time when the needlework industry was preparing itself for the holiday season. It contributed toward a drastic decline of production in certain branches of the needlework trade. The effect was particularly marked while there was no definite way of determining how the status of home workers under this law would be affected. A decision exempting home workers from the provisions of this insular law was made too late for the holiday trade to make up for lost output.

The Fair Labor Standards Act of June, 1938, provided that employers should pay employees in "commerce or in the production of goods for commerce" not less than 25 cents per hour for the first year under

the Act, and not less than 30 cents after the first year. Uncertainty as to its probable effects on the needlework trade of the Island resulted and intervened with trade developments which otherwise might have taken place. Political conditions in most European countries at the time the law was passed were favorable to a shift of the needlework trade from some of these countries, particularly Czechoslovakia. Similarly, the war in Asia, making it difficult for China to produce and deliver the quantities of needlework which they might otherwise have done, might have brought some expansion of the needlework industry in the Island. With this expansion the Fair Labor Standards Act is said to have interfered, not through its enforcement, but by reason of the legal uncertainty which its approval created. The Fair Labor Standards Act, in spite of its non-enforcement, has kept continental operators from sending goods to the Island, and has affected adversely those phases of the needlework industry in which factory work is of importance.

In addition to these, other factors, some of which cannot be readily measured, probably had an influence on the industry. Important ones are changes in styles, changes in purchasing power, influence of economic conditions in the Mainland, and depreciation of the Chinese currency, making it possible to sell Chinese products in the United States at lower prices in terms of dollars.

c. Economic Importance of the Industry to Puerto Rico.---The economic and social importance of the needlework industry to the Island is to-day more marked than ever before, if one stops to consider that seven or eight per cent of all the people on the Island depend highly on it and derive from it supplementary income which, in many cases, wards off starvation

The industry is concentrated in the cities, and especially in the western section of the Island, which has suffered from the collapse of the coffee growing industry. It gives employment to large numbers of people who have drifted in from distressed agricultural areas, especially from the coffee zone of the mountainous interior. By bringing employment to people who have stayed behind in distressed rural areas, it has helped considerably to keep in their homes people who might otherwise have followed those who have wandered off to the city slums. In all these regions it may be seen, the significance of the industry as a source of supplementary income is very considerable. Here the collapse of the industry would either create worse economic and social conditions or would render advisable and necessary a policy of relief applied on a much wider scale than at any other time has been made available. So long as opportunities of work continue to be meagre in the island of Puerto Rico, and a considerable portion of its inhabitants are out of a job, the needlework industry--wisely controlled and regulated--can play a very important and useful part in the social economy of the Island.

4. The Distilling Industry.

The distilling industry in Puerto Rico was of minor importance prior to the prohibition era, when its output was restricted mostly to alcoholic beverages for domestic consumption. After the approval of the Volstead Act, this industry received a setback, but towards the end of the 1920's it gained more importance, with the production of industrial alcohol for sale in continental United States. With the prohibition repeal amendment that went into effect on December 5, 1933, the production of rum was started, and the distilling industry grew rapidly until now it ranks

high in importance among the Island's industrial enterprises. There are actually twelve distilleries and 47 rectifiers established in the Island, several of which produce nationally known brands of rum. Duty exempt, these runs have been gradually gaining ground on foreign products, and a greater market is expected for them within the next few years.

The production of commercial alcohol and rum are influenced principally by conditions prevailing in the continental markets. The commercial alcohol market has been peculiar in recent years for the increasing quantities of low priced synthetic alcohol being sold in it. The rum produced in the Island sells in the Mainland markets in direct competition with Virgin Island and imported rums and indirectly with other alcoholic beverages. Trade agreement concessions on rum have had little effect on the Island's rum industry. Nevertheless, when it is taken into consideration that Puerto Rico was within the regulation provided by the Prohibition Amendment and had to start its industry from the beginning while foreign producers already had stocks of aged rum, it looks probable that the rum concessions stunted the growth of the Island's rum manufacturing.

Shipments of rum from Puerto Rico to the continental United States have shown a distinct upward movement since 1933. In 1933-34 only 244 proof gallons of rum valued at \$335 were exported to the United States. Rum exports increased progressively since then and reached their peak level in 1940, when rum at a value of \$5,568,000 was shipped to the Mainland (see Table XLIV, page 194).

5. The Fruit Canning Industry.

The fruit canning industry has lost considerably in importance to insular economy during recent years. The number of persons employed in

fruit canning establishments has been estimated at over 2,000 persons by the Puerto Rico Fruit Exchange, although in the seven canneries inspected by the Insular Department of Labor in 1940, only 661 persons were employed. (1) The average number of days employment per season in these canneries varies from about 75 to 120, depending on the number of commercial fruit crops handled by the cannery. The canneries employ both women and men in their work. In the fruit canning shops inspected by the Insular Department of Labor in 1940, 446 female and 215 male workers were employed, and actually earned \$3.07 and \$2.57 per week respectively.

Table XLIX

Exportation of Canned Fruits from Puerto Rico,
Fiscal Years 1925-26 to 1939-40.
(thousands of dollars and pounds)

Year	Canned Grapefruits:		Canned Pineapples :		Citrons in Brine	
	Quantity	Dollars	Quantity	Dollars	Quantity	Dollars
	(pounds)		(Pounds)		(Pounds)	
1925-26	6,348.0	605.7	1,806.6	162.1		
1926-27	9,262.4	1,034.0	1,402.6	128.2		
1927-28	10,733.7	1,002.6	2,121.6	142.3		
1928-29	2,832.3	263.1	2,323.2	241.8		
1929-30	12,415.3	1,047.9	4,476.6	359.5		
1930-31	5,931.6	465.0	1,747.6	123.3	349.1	26.0
1931-32	4,982.2	322.4	2,372.0	135.4	515.3	29.8
1932-33	1,463.7	92.3	287.8	13.3	349.7	32.0
1933-34	4,604.1	249.9	1,015.5	62.8	669.8	23.7
1934-35	7,827.9	479.7	1,969.3	131.7	930.4	34.4
1935-36	8,212.9	522.8	1,922.2	123.4	929.1	32.3
1936-37	10,281.8	591.1	4,568.4	266.4	1,437.8	49.7
1937-38	5,760.1	319.1	2,882.5	166.5	1,001.7	37.7
1938-39	3,251.0	170.5	2,580.7	142.7	1,112.8	39.5
1939-40	3,426.0	170.1	3,844.6	229.5	1,524.8	60.3

Source: Compiled from "Annual Book on Statistics, 1939-40", Insular Department of Agriculture and Commerce.

Recent difficulties in the fruit canning industry have resulted

(1) Smith, Dudley, "Income Problems of Puerto Rico," Association of Sugar Producers of Puerto Rico, Washington, 1939, Page 32.

mainly from tariff concessions made in recent reciprocal trade agreements and from increased competition from continental areas and other domestic areas. As a result of these conditions the industry has lost substantially in importance as a source both of income and employment. Such a situation is clearly shown in the present tendency in exportation of canned pineapples, grapefruits, and citrons in brine. Canned pineapples exports increased progressively from \$162,099 in 1925-26 to \$359,447 in 1929-30, declined considerably during the depression period, reaching a low of only \$13,292 in 1932-33, reached another high in 1936-37, but dropped to \$142,721 in 1938-39 (see Table XLIX). Shipments in 1939-40 increased about 60 per cent over 1938-39, but since then have declined due to war conditions. Canned grapefruit exports reached a peak movement of \$1,047,910 in 1929-30, declined to \$92,248 in 1932-33, reached a new high in 1936-37, but declined since to \$170,130 in 1939-40, the lowest figure in record, except 1932-33. Citrons in brine, on the other hand, scarcely held its own between 1930 and 1935, declined during 1936 and 1939, but reached its highest level on record in 1939-40 when exports at a value of \$60,321 went into United States.

6. The Construction Industry.

The construction industry in Puerto Rico is characterized by wide variations on the basis of number of units constructed, thus showing no definite upward or downward trend. It is also subjected to a certain degree of seasonality, being more active during the spring months than during the remainder of the year. The industry has shown an increasing trend up to 1925, a general decreasing trend from 1925 to the depression of 1930-33, and a pronounced improvement from 1934 on. From 1924 to 1926 there was considerable activity in both residential and industrial building. During the depression period, however, the volume of building declined to

about one-half the level existing between 1924 and 1926. Following the depression construction activity was stimulated by a variety of conditions including the investment of funds that formerly went out of the Island, other monies made available for construction, and the general need for better housing. Residential and industrial construction in the near future will depend to a considerable extent upon the availability of these funds and Federal monies provided for these purposes.

D. General Factors Which Affect Possibilities of Development.

While the possibilities of industrial development in Puerto Rico are not many, they warrant some hope within their limited field. The factors which enter into the determination of such development are four: raw materials, power resources, labor costs, and markets.

a. The Raw Material Factor.--As has been seen in Chapter I of this thesis, Puerto Rico has no coal, oil, or other mineral and forest resources upon which to look to develop important industries. The only agricultural raw materials produced abundantly and which might form the basis of further manufacturing development in the Island are the products coming from its cane, tobacco and fruit fields, and to a minor extent from its small farms. Alcohol is distilled in the Island from local molasses afforded by the sugar industry. Bagasse from crushed sugar-cane and the brava-cane constitute an important source of cellulose for the manufacture of paper, and recently has acquired importance as a raw material for building board. Sea-Island cotton is raised to some degree and seems to have a future either for export or for elaborating the fiber, which is high-graded, in the Island. Pineapple, grapefruit, and orange canning, as well as the canning of such vegetables as peppers, pigeon peas,

tomatoes, banana leaves, pasteles and hallacas should also continue to increase in importance. But cotton mills, and fruit and vegetable canneries, like sugar mills, require an assured supply of agricultural raw materials. Therefore, they must either go into an intensive program of large-scale farming, or enter into contracts with independent growers to assure themselves of a regular supply. Such requirements are surrounded with serious difficulties in Puerto Rico, and are further accentuated by the market uncertainties which are typical in the production of each of the products mentioned.

The Island's prospects of becoming an important manufacturing center would be rather meagre upon the whole were it dependent entirely upon the restricted supply of local raw materials. Such a possibility, however, becomes greater when consideration is given to the favorable geographic situation of the Island for the acquisition in sufficient quantity of such materials from abroad; not only are those of the continental United States available, but those of the other Caribbean islands and the South American continent as well.

b. Power Resources.--Power, like raw materials, is a factor that must be given consideration in determining the possibilities of industrial development in Puerto Rico. It has been estimated that a potential hydroelectric development of over 60,000 horsepower is commercially practicable in the Island. Due to wide variations in precipitation and stream flow, steam-generated current must be utilized to supplement hydroelectric current for a portion of the year. As a result, the cost of steam generation eventually determines the cost of power to the manufacturer. On the other hand, the linking of hydro and steam plants affords industry stability of service, as power is transferred and made available wherever it may be needed at a moment's notice.

With the exception of many sugar mills and canneries operated by steam, most manufacturing establishments in the Island use electric energy. In 1910, of a total of 34,000 horsepower employed by manufacturing enterprises in the Island, only 1,385 horsepower was electric. A decade later, the total horsepower had increased to 57,227, of which 8,139 was electric. Actually manufacturing enterprises in the Island are estimated to be using over 15,000 horsepower of electric energy.

Charges for electric current naturally vary according to the amount consumed. Secondary power rates scale down from 5 cents to 2 cents per kilowatt-hour and wholesale primary power rates scale down as low as $1\frac{1}{4}$ cents per kilowatt-hour. Electric service is available at these rates in thirty-four municipalities in the northeastern section of the Island. Power from irrigation plants is obtainable in some sections at $1\frac{1}{2}$ cents per kilowatt-hour. Special low rates are also obtainable for industrial purposes when the consumption is large. The amount of current consumed for all purposes, including lighting, in Puerto Rico, is estimated at 125 million kilowatt-hours. There is at present no sign that limitations of either supply or cost will limit the expansion of small industries. On the contrary, present indications point towards an expanded production of electrical energy to take care of any future needs of present or future local industries.

c. Labor.--There is no general agreement as to what the Puerto Rican worker is capable of doing. The truth is that the people of the Island form a heterogenous body, differing in race, education, intelligence, and aptitude. Experience, however, shows that with enough training they make reasonably good operatives. The period of training, however, is

ordinarily long, but even then their output does not approach Mainland standards. This is in most cases due to irregularity of workers' attendance influenced by a low standard of living and, to a less extent, by climatic conditions. It partly accounts for the low earnings prevailing in many industries in the Island.

Most industries have located in Puerto Rico because of easy accessibility to a cheap labor supply, occasioned by the tremendous abundance of labor in the Island. Such industries as needlework, cutting of diamonds, making of hats, stemming, or stripping tobacco, and others, illustrate the case. Most of these industries rely primarily on hand labor making almost no use of tools and machinery. They have located in the Island in spite of considerable expenditures involved in circuitous routing of materials and the time lost in such routing. This has been due mainly to the fact that the labor differential is sufficient to offset the cost in money and time of circuitous shipping.

d. Markets.---Puerto Rico with its low standard of living does not furnish a local market large enough to become the seat of either large industrial enterprises or of dispersed small industrial establishments with a large aggregate production. Opportunities of industrial expansion would no doubt exist could the purchasing power of the Puerto Rican workers be increased with added openings for factory work, but in view of actual conditions this is beyond consideration.

There is a prospect for Puerto Rican manufactures in the islands and republics of the Caribbean region as recent exportation statistics seem to indicate. Despite present trends indicating the possibility of converting these markets into a permanent outlet for Puerto Rican manufactures, the Island continues and probably will continue to depend to

a considerable, if not almost absolute extent on the Mainland for its main support. The mainland markets are the only potential buyers of Island manufactures large enough to warrant an extensive program of industrial development. No overestimation of these markets should be made. In these markets, the Island manufacturers are protected from the competition of other nations whose great advantage is too cheap labor, and assured of an outlet through which to dispose of the goods which their cheap labor enables them to manufacture at low cost.

In summarizing this discussion of the factors conditioning the possibilities of industrial development in Puerto Rico, it could be said that the Island's prospects of converting itself in a big manufacturing center are virtually nil, though it holds some promise for the development of small industries of a local character. Its superabundance of cheap labor and tariff protection are factors which can help considerably in such development. The possibility of transforming itself into a manufacturing center is, however, handicapped by the scarcity of raw materials, the lack of ample supplies of mineral resources and fuel, the lack of skilled laborers and native capital, its limited territory, the high cost of production resulting from the preceding, and other factors.

E. Possibilities for Industrial Expansion.

The Division of Industries of the Department of Agriculture and Commerce of Puerto Rico has been conducting extensive investigations and experiments in various fields with an object of developing new industries in the Island. Great possibilities have been seen in the processing of the "china-silvestre" or Puerto Rican wild orange which grows extensively in the coffee regions of the Island. Among the products which can be obtained from it and marketed profitably are: orange juice, marmalade

and jams, brandies, wines, alcohols and vinegars, and essential oils. The peel and residues can be used in the manufacture of animal feeds. From its seeds a vegetable oil can be obtained for manufacturing soap.

Other experiments, considered also as promising and important, have been made by the same Division. Among these is the preparation of mixed animals' feeds for dairy cows, pigs, poultry, etc. The raw materials from which such preparation could be made are the residues from citrous waste, meal from "Sea-Island" cotton seed, meal from peanuts, and residues from the extraction of starch from roots or tubers, etc. Studies have also been made for the processing of several tropical fruits and vegetables for the production of pulps, nectars, juices, candied foods, etc. Many of these offer great possibilities, such as the mango, tamarind, pineapple, lemon, guanabana (sour-sop), papaya, calabaza (squash), plantain, pepper, etc.

CHAPTER IX

EXTERNAL TRADE AND OTHER RELATIONS

Puerto Rico's external trade has suffered important changes in composition, geographic distribution, and volume since the beginning of the American occupation. In addition, a variety of other trade and financial relations with the outside world, and particularly with the United States, have developed. Of particular importance in connection with Puerto Rican trade relations has been the investment of American capital in the development of the Island's resources and the consequent transformation of the economy of the Island.

In going over the development and present status of Puerto Rico's external trade and financial relations the following shall be considered: the value and volume of merchandise imported and exported, significant changes in the Island's external trade, the changes in the character of both imports and exports, the shifts in direction of Puerto Rican trade, and the extent and character of other external transactions at the present time. This will be followed by a discussion of the tariff relations with the United States and their economic effects, the extent and character of foreign investments in the Island, and the effects of the American coastwise shipping laws on the Island's trade.

A. Changes in the Island's External Trade, 1898 to 1940.

1. Value and Volume of Exports and Imports.

Except in a few years of abnormal circumstances, the value of shipments of merchandise from Puerto Rico has exceeded the value of merchandise shipments to Puerto Rico. In the following table are indicated the figures of Puerto Rican external trade annually from 1901 through the

fiscal year ending June 30, 1940.

Table L

Value of External Trade, 1901-1940.
(In thousands of dollars, for years ending June 30)

Year	: Imports	: Exports	: Net	: Year	: Imports	: Exports	: Net
1901	: 8,908	: 8,584	: -324	1921	: 105,480	: 112,279	: 6,799
1902	: 13,209	: 12,434	: -775	1922	: 64,175	: 72,173	: 7,998
1903	: 14,449	: 15,089	: 640	1923	: 71,945	: 82,293	: 10,348
1904	: 13,169	: 16,266	: 3,097	1924	: 89,370	: 88,281	: -1,089
1905	: 16,536	: 18,710	: 2,174	1925	: 90,505	: 94,819	: 4,314
	:	:	:		:	:	:
1906	: 21,828	: 23,258	: 1,430	1926	: 95,268	: 98,725	: 3,457
1907	: 29,267	: 26,996	: -2,271	1927	: 98,814	: 106,717	: 7,903
1908	: 25,826	: 30,644	: 4,818	1928	: 92,302	: 103,535	: 11,233
1909	: 26,544	: 30,391	: 3,847	1929	: 97,859	: 81,851	: -16,008
1910	: 30,635	: 37,960	: 7,325	1930	: 83,633	: 99,651	: 16,018
	:	:	:		:	:	:
1911	: 38,787	: 39,918	: 1,131	1931	: 76,437	: 99,401	: 21,964
1912	: 42,973	: 49,705	: 6,732	1932	: 61,281	: 86,469	: 25,188
1913	: 36,900	: 49,104	: 12,204	1933	: 54,746	: 75,472	: 20,726
1914	: 36,407	: 43,103	: 6,696	1934	: 63,925	: 86,528	: 22,603
1915	: 33,884	: 49,357	: 15,473	1935	: 69,986	: 79,678	: 9,692
	:	:	:		:	:	:
1916	: 38,951	: 66,732	: 27,781	1936	: 84,130	: 99,298	: 15,168
1917	: 53,545	: 80,971	: 27,426	1937	: 98,860	: 114,954	: 16,094
1918	: 63,389	: 74,294	: 10,905	1938	: 93,315	: 82,077	: -11,238
1919	: 62,391	: 79,496	: 17,105	1939	: 82,716	: 86,487	: 3,771
1920	: 96,389	: 150,811	: 54,422	1940	: 107,030	: 92,347	: -14,683
	:	:	:		:	:	:

Source: Compiled from "Annual Book of Statistics, 1939-40", Insular Department of Agriculture and Commerce.

It will be seen that during the period 1901-1940, only seven years showed greater value of merchandise shipments to Puerto Rico than the value of merchandise shipments from Puerto Rico. During 1901 and 1902, considerable amounts of machinery and equipment shipped to the Island prior to the expansion of sugar production account for the unfavorable balance of trade during these years. The year 1907 was one of financial crisis, and that of 1924 a year of low prices. The period of the World War I and its aftermath,

1915-20, showed a great expansion in the value of exports, resulting in a very substantial favorable balance of trade. For the years 1921-28, the excess of exports averaged about \$4,500,000. In 1929, there was a striking case of export deficiency amounting to over 16 million dollars. Imports did not deviate considerably from normal, but exports were seriously reduced as a result of the hurricane of 1928. The 1938 deficiency is explained by the large sugar shipments made in 1937 which cut into the volume of exports in 1938, and that of 1940, by present war conditions.

Since, during this period from 1901 to 1940, the prices of goods imported and exported by the Island varied considerably, the value figures do not accurately measure the growth of the export trade and the import trade of Puerto Rico.

In order to determine the fluctuations in volume, the value figures need to be corrected for price changes. This is accomplished by dividing the import figures by the Bureau of Labor index number for wholesale prices in the United States and by dividing the export figures by a special index number based on changes in the prices of the particular commodities covering most of the outbound trade of Puerto Rico. The volume of the external trade of Puerto Rico arrived at in this manner is shown in the table on the following page which covers a series of five-year periods since 1900, and relates the trade figures to population growth.

This table indicates that for the period 1901 to 1925, both the physical quantity of exports and imports increased progressively, save for the war period, when imports were not quite as great as in the five years preceding. The latter indicates that the masses of the people were apparently not able to expand their consumption as a result of the high prices

which exports commanded. During the five-year period, 1926-30, the volume of trade continued to rise, but exports increased more rapidly than imports. This was a period of expanding sugar production but the declining purchasing power resulting from the low prices commanded by sugar goods in

Table LI

Yearly Average Volume by Five-Year Periods
of the External Trade of Puerto
Rico, 1901-39.
(million of dollars)

	Imports		Exports	
	Total	Per Capita	Total	Per Capita
1901-05	23.9	23.6	19.2	18.9
1906-10	43.5	39.9	36.9	33.9
1911-15	57.7	49.3	53.3	45.4
1916-20	53.0	42.0	64.2	50.9
1921-25	81.1	59.0	72.3	52.6
1926-30	94.4	62.9	102.4	68.4
1931-35	93.0	56.5	120.2	73.1
1936-39	113.0	63.1	129.7	72.5 ^{1/}

^{1/} Four-Year Period

Source: Zimmermann, Erich W., "Staff Report to the Interdepartmental Committee on Puerto Rico," Washington, 1940, Page 118.

the Mainland operated to prevent an increase in imports corresponding to that in exports. In the period 1931 to 1935, the volume of shipments continued to expand though imports showed a slight decline. Export prices continued to show their declining trend. Import prices also declined but less rapidly than did export prices. Although the volumes of shipments increased, a greater relative drop in export prices caused a decline in the physical quantity of merchandise imported. These differential price changes of imports and exports carried the Island to produce and market a greater amount of goods so as to obtain the same amount of goods in exchange than had been true in preceding periods. In the period 1936 to

1939, both exports and imports increased as contrasted with the preceding period. The increase in imports, however, was far more rapid than that in exports. Sugar prices during this period increased somewhat as a result of the restrictions which operated under the agricultural adjustment program.

The rapid expansion of external trade in proportion to population is shown by the per capita figures. Exports have risen from less than \$20 per capita in 1901-05 to around \$73 during the four-year period, 1936-39, while imports have risen from less than \$24 to more than \$63 per capita. The rapid growth in the population of the Island, however, has prevented the per capita trade from rising as rapidly as the total trade. Thus, while the external trade increased from an average of about 43 million dollars in 1901-05 to around 243 million dollars in 1936-39, or over 450 per cent, the corresponding per capita figures increased from over 42 dollars to more than 135 dollars, or 220 per cent. This growth of external trade in proportion to population is the result of the disappearance of a self-sufficient economy and the forthcoming of one in which Puerto Rico is intricately linked with the commerce of the rest of the world, especially with that of the United States.

2. Character and Composition of External Trade.

Agricultural products, particularly sugar, constitute the greatest percentage of Puerto Rico's export trade. The character and composition of the Island's export trade at selected periods since the beginning of the American occupation is shown in Table III.

In dollar value terms, raw sugar reached a peak movement in 1920, but has since, after this boom, maintained its own in the out-bound trade of the Island. Raw sugar exports have almost continually been responsible for

Table LIII

Composition of Out-Bound Trade for Selected Years ^a
 Years ending June 30.
 (value in thousands of dollars)

Commodity	1901			1914			1920			1924		
	Value	Dis-tribution	Per-centage	Value	Dis-tribution	Per-centage	Value	Dis-tribution	Per-centage	Value	Dis-tribution	Per-centage
Products of the Soil												
Raw Sugar	6,861	79.9		35,065	81.3		125,355	83.1		69,769		79.0
Leaf & Scrap Tobacco	4,716	54.9		20,240	47.0		98,924	65.6		47,839		54.2
Coffee	375	4.4		5,350	7.7		13,416	8.9		13,190		14.9
Grapefruit, fresh	1,678	19.8		8,194	19.0		9,034	6.9		4,596		5.2
Pineapple, fresh	-----	-----		752	1.7		1,333	0.9		2,001		2.3
Oranges	-----	-----		1,246	2.9		479	0.3		812		0.9
Coconuts	84	1.0		752	1.7		834	0.6		474		0.5
Cotton	8	0.1		452	1.1		1,142	0.7		616		0.7
	-----	-----		79	0.2		193	0.1		241		0.3
Manufactures												
Molasses	968	11.3		7,065	16.4		14,134	9.4		14,256		16.2
Alcohol	596	6.9		986	2.3		1,278	0.9		427		0.5
Cigars	---	---		21	0.1		152	0.1		147		0.2
Canned fruits & other	306	3.6		5,597	13.0		11,614	7.7		5,460		6.2
Textiles	17	0.2		199	0.4		113	0.1		537		0.6
Straw and palm leaf	8	0.1		(b)	---		807	0.5		7,505		8.5
Refined Sugar	41	0.5		262	0.6		170	0.1		180		0.2
	-----	-----		-----	-----		-----	-----		-----		---
Miscellaneous Exports ^c	755	8.8		973	2.3		11,322	7.5		4,256		4.8
Grand Total	8,584	100.0		43,103	100.0		150,811	100.0		88,281		100.0

Table LII

Composition of Out-Bound Trade for Selected Years^a
 Years ending June 30.
 (value in thousands of dollars)

Commodity	1928			1932			1936			1940		
	Value	Per-centage	Dis-tribution	Value	Per-centage	Dis-tribution	Value	Per-centage	Dis-tribution	Value	Per-centage	Dis-tribution
Products of the Soil	80,845	78.1		58,620	67.8		62,455	63.0		49,255		53.3
Raw Sugar	54,570	52.7		47,280	54.7		50,338	50.8		41,457		44.8
Leaf & Scrap Tobacco	17,075	16.6		6,715	7.8		9,254	9.3		3,029		6.5
Coffee	2,597	2.5		155	0.2		496	0.5		369		0.4
Grapefruit, fresh	2,704	2.6		1,820	2.1		790	0.8		163		0.2
Pineapple, fresh	1,654	1.6		1,897	2.2		1,183	1.2		843		0.9
Oranges	1,286	1.2		96	0.1		12					
Coconuts	714	0.7		269	0.3		326	0.3		289		0.3
Cotton	245	0.2		368	0.4		6			105		0.1
Manufactures	15,823	15.2		24,284	28.1		31,717	32.0		33,229		46.7
Molasses	862	0.8		784	0.9		1,541	1.6		713		0.8
Alcohol	405	0.4		272	0.3		507	0.5		517		0.6
Cigars	3,626	3.5		2,404	2.8		1,097	1.1		40		
Fruits, canned & other:	1,180	1.1		502	0.5		696	0.7		465		0.5
Textiles	9,584	9.3		12,249	14.2		17,624	17.8		15,365		16.6
Straw and palm leaf	166	0.1		263	0.3		340	0.4		257		0.3
Refined Sugar	-----	----		7,839	9.1		9,915	10.0		15,872		17.2
Miscellaneous Exports ^c	6,867	6.7		3,565	4.1		4,962	5.0		9,863		10.7
Grand Total	103,535	100.0		86,469	100.0		99,134	100.0		92,347		100.0

a. Compiled from Commercial Porto Rico in 1906, U.S. Department of Commerce and Labor, and from Annual Reports of the Governor of Puerto Rico.

b. Not separately listed.

c. Largely reshipments of goods brought in from the United States.

more than fifty per cent of the total value of shipments. The high percentage in 1920 is explained more by the high price of sugar as contrasted with other goods during the year than by a rise in the amount shipped.

The shipments of leaf and scrap tobacco have increased substantially since American occupation to reach a peak level in 1928, but have since then dropped considerably. Tonnage figures also indicate a sharp decline in the importance of the tobacco growing industry.

Coffee, on the other hand, has shown a distinct downward trend since before the World War I. Not only has it shown a substantial decline in percentage figures but also an actual decline in the value of the product shipped to exterior markets. As the table indicates both percentage and export figures reached a deep low in 1932, after which both figures have shown some improvement. The latter is due to the policy of subsidization being actually applied in coffee marketing.

Fruits, including grapefruit, pineapples, oranges and coconuts, showed a considerable increase in percentage terms between 1901 and 1914. In this last year they reached their highest percentage figure on record--7.4 per cent. After 1914 fruits dropped considerably in percentage figures reaching a low in 1924, increased to a high in 1932, and again decreased in recent years. In aggregate values the decline has been substantial.

In the manufactured group, textiles showed an increasing movement both in percentage terms and in aggregated values up to 1936, but have since then decreased slightly. Cigars showed an increase during the war period, but have since declined substantially. Refined sugar has shown a substantial increase in recent years, and to-day ranks third among Puerto Rican exports.

Data for selected years indicating the total commodities received in Puerto Rico since 1900 are shown in Table LIII. It can be seen that edible animal products and vegetable food products and beverages have consistently constituted much the largest percentage of the total, ranging from 32.4 per cent to 51.5 per cent of the total. Receipts of inedible animal and animal products, wood and paper, textile fibers and manufactures, non-metallic minerals, metals and manufactures, etc. have shown no significant variation in relation to total. Imports of inedible vegetable products, excluding fiber and wood, rose rapidly from 1901 and 1928, but have since then remained fairly constant in percentage terms. Machinery and vehicles increased also rapidly in terms of aggregate value and percentage figures up to 1928, suffered a drastic drop in 1932, but recovered fairly well after that.

3. Shifts in Direction of Puerto Rican Trade.

About 95 per cent of Puerto Rico's external trade is actually carried on with continental United States. The geographic distribution of the Island's external trade for selected years is shown in Table LIV.

Both the outgoing and the incoming trade of the Island with the United States have increased considerably since 1887-91. From an annual average of 28.7 per cent in 1887-91, exports have increased to constitute 98.4 per cent of the total outgoing trade of the Island in 1940. Imports in percentage terms reached a peak in 1920 and again in 1940, when imports from Europe and other countries were restricted due to war conditions. Further computations show that for the five-year period 1901-05 the Island's commerce with the Mainland averaged 78 per cent, whereas starting with 1906 it has varied from 85 to 95 per cent of the total. These percentages

Table LIII

Total Commodities Received in Puerto Rico by Commodity Groups,
in Specified Years, 1901 to 1940.
Years ending June 30.
(values in thousands of dollars)

Commodity Group	1901			1914			1920			1924		
	Value	Per-centage	Dis-tribution	Value	Per-centage	Dis-tribution	Value	Per-centage	Dis-tribution	Value	Per-centage	Dis-tribution
Animal and Animal Pro-ducts, edible	1,621:	18.4:		5,757:	16.2:	12,524:	12.8:			11,524:	12.9:	
Animal and Animal Pro-ducts, inedible	249:	2.8:		1,859:	5.2:	5,231:	5.4:			3,316:	3.7:	
Vegetable food products and beverages	2,915:	33.1:		10,044:	28.2:	27,544:	26.7:			18,875:	21.1:	
Vegetable products, inedible, except fiber and wood	24:	.3:		369:	1.1:	1,880:	2.0:			3,236:	3.6:	
Textile fibers and manu-factures	1,836:	20.8:		5,777:	16.2:	21,301:	22.1:			16,971:	19.0:	
Wood and Paper	458:	5.2:		2,470:	6.9:	4,624:	4.8:			6,479:	7.2:	
Nonmetallic minerals	235:	2.7:		1,646:	4.6:	4,404:	4.6:			5,462:	6.1:	
Metals and manufactures, except machinery and vehicles	372:	4.2:		2,732:	7.7:	5,229:	5.4:			7,357:	8.2:	
Machinery and vehicles	268:	3.0:		618:	1.7:	2,813:	2.9:			6,565:	7.4:	
Chemicals and related products	222:	2.5:		2,399:	6.8:	7,530:	7.8:			6,745:	7.6:	
Miscellaneous	615:	7.0:		1,922:	5.4:	5,309:	5.5:			2,840:	3.2:	
TOTAL	8,918.4/	100.0:3/	36,407.4/	100.0:0:	96,389:	100.0:	89,370:	100.0:				

Table LIII (Continued)

Total Commodities Received in Puerto Rico by Commodity Groups,
in Specified Years, 1901 to 1940.
(values in thousands of dollars)

Commodity Group	1928			1932			1936			1940		
	Value	Per-centage	Dis-tribution	Value	Per-centage	Dis-tribution	Value	Per-centage	Dis-tribution	Value	Per-centage	Dis-tribution
Animal and Animal Products, edible	11,423	12.4		7,222	11.8		9,886	11.8		10,623		9.9
Animal and Animal Products, inedible	3,682	4.0		2,369	3.9		3,214	3.8		4,360		4.1
Vegetable food products and beverages	18,502	20.0		12,911	21.1		19,174	22.9		20,201		18.9
Vegetable products, inedible, except fiber and wood	6,104	6.6		4,182	6.8		4,905	5.9		6,018		5.6
Textile fibers and manufactures	16,286	17.6		12,026	19.6		16,351	19.6		20,205		18.9
Wood and paper	5,177	5.6		3,043	5.0		4,436	5.3		6,190		5.6
Nonmetallic minerals	6,758	7.3		4,775	7.8		4,799	5.7		8,021		7.5
Metals and manufactures, except machinery and vehicles	5,758	6.4		2,833	4.6		4,809	5.8		8,576		8.0
Machinery and vehicles	7,641	8.3		3,650	5.9		6,821	8.2		10,415		9.7
Chemicals and related products	7,035	7.6		5,501	9.0		6,232	7.5		8,296		7.8
Miscellaneous	3,864	4.2		2,769	4.5		2,964	3.5		4,126		3.8
TOTAL	92,342	100.0		61,281	100.0		83,591	100.0		107,031		100.0

Source: Compiled from Commercial Porto Rico in 1906, U.S. Department of Commerce and Labor, and from the Annual Reports of the Governor of Puerto Rico.

1/ Includes "seeds" valued at \$8,334 not separately listed.

2/ Includes "all other" iron and steel manufactures valued at \$93,881 not specifically classified

3/ Includes foreign merchandise purchased in or shipped through the continental United States, valued at \$103,491 in 1901, and at \$813,673 in 1914, not distributed to commodity groups.

4/ Based on total for detailed commodity groups, excluding foreign merchandise purchased in or shipped through the United States.

Table LIV

Distribution of Puerto Rico's Outgoing and Incoming Trade by Countries
(Per Cent)

Fiscal Year ending June 30.

Outgoing Trade							
Countries	:1887-91:	:	:	:	:	:	:
	:annual :	1901 :	1914 :	1920 :	1928 :	1935 :	1940 :
	:average:	:	:	:	:	:	:
Shipments to:	:	:	:	:	:	:	:
United States	: 28.7 :	65.0 :	79.9 :	88.3 :	93.4 :	97.4 :	98.4 :
Cuba	: 19.8 :	12.9 :	7.1 :	4.8 :	0.2 :	---- :	0.1 :
Other American countries	: 6.9 :	5.9 :	0.4 :	5.4 :	5.1 :	2.6 :	1.4 :
Spain	: 21.4 :	7.0 :	3.2 :	1.1 :	0.8 :	---- :	---- :
Other European countries	: 23.2 :	9.2 :	9.3 :	0.4 :	0.2 :	---- :	---- :
Other countries	: ---- :	---- :	0.1 :	---- :	0.3 :	---- :	---- :
TOTAL	: 100.0 :	100.0 :	100.0 :	100.0 :	100.0 :	100.0 :	100.0 :
Total exports	:	:	:	:	:	:	:
(In thousands of dollars):	10,548 :	8,584 :	43,103 :	150,811 :	103,535 :	79,678 :	92,347 :
	:	:	:	:	:	:	:
Incoming Trade							
	:1887-91:	:	:	:	:	:	:
	:annual :	1901 :	1914 :	1920 :	1928 :	1935 :	1940 :
	:average:	:	:	:	:	:	:
Shipments from:	:	:	:	:	:	:	:
United States	: 23.6 :	78.1 :	89.5 :	94.1 :	96.3 :	90.8 :	93.9 :
Cuba	: 4.3 :	---- :	0.1 :	0.1 :	1.4 :	0.4 :	0.3 :
Other American countries	: 6.8 :	3.6 :	2.6 :	3.3 :	7.0 :	5.2 :	3.1 :
Spain	: 28.6 :	9.1 :	2.1 :	1.0 :	0.8 :	0.8 :	0.3 :
Other European countries	: 36.7 :	9.1 :	4.5 :	1.0 :	3.2 :	1.6 :	1.2 :
Other countries	: ---- :	0.1 :	1.2 :	0.5 :	1.3 :	1.2 :	1.2 :
TOTAL	: 100.0 :	100.0 :	100.0 :	100.0 :	100.0 :	100.0 :	100.0 :
Total Imports	:	:	:	:	:	:	:
(In thousands of dollars):	14,412 :	8,908 :	36,407 :	96,389 :	92,348 :	69,986 :	107,030 :
	:	:	:	:	:	:	:

Sources: Report on The Trade of Puerto Rico, by Frank H. Hitchcock, (U. S. Department of Agriculture, 1898†; Commercial Porto Rico in 1906 (United States Department of Commerce); Annual Reports of the Governor of Puerto Rico; and Annual Book of Statistics, (Puerto Rico Department of Agriculture and Commerce).

may exaggerate the importance of trade with the Mainland since included in this trade is all that one which moves through the United States to and from foreign countries.

Other American countries constitute the next most important export market of Puerto Rico, accounting in 1940 for 1.4 per cent of the total. Among these the Dominican Republic and Venezuela are the most important. While the trade with Cuba has been declining, that with the Dominican Republic and other West Indies islands is increasing. The Trade with Spain has declined considerably in percentage terms and recently has totally disappeared due to the break of the present war. The only European country with which the Island traded in 1940 was the United Kingdom. Trade with other European countries has declined substantially since the beginning of the century, and to-day is of almost no significance to the Island.

Among the countries from which the Island imports, the American countries, other than the United States, are again the most important after the Mainland. Imports from these countries have remained fairly constant in relation to total since 1901. Among them the most important from the standpoint of aggregate value are New Foundland and Labrador, the Dominican Republic, Canada and Uruguay. The Netherland West Indies, however, surpasses all of them in importance. Imports from Cuba, excepting 1928, have shown no wide variations in percentage terms. Imports from Spain, like exports to Spain, have shown a definite decline since 1901, but still remain second in importance in the European trade. At present the United Kingdom ranks first among the European countries from which the Island imports.

4. Extent and Character of Other External Relations.

Ordinarily, Puerto Rico has a favorable balance of trade resulting from an excess of merchandise exports over merchandise imports. Aside from this commodity trade which results in a net income to the Island, Puerto Rico has a series of other trade and financial relations with the exterior

world, some of which bring net income to the Island, and some^{of} which result in net outgo. Among those operations which result in net income to Puerto Rico are: the commodity trade, resulting in an export or credit merchandise balance, gifts and contributions, Federal expenditures in the Island, emigrant remittances, and advertising. Operations which result in net outgo from the Island are: freight payments and marine insurance on imports, commissions, remittances to families abroad, tourist trade, brokerage and other insurance transactions, motion picture royalties, cable and radio charges, lottery tickets, and payment of interest, dividends and rents to continental and foreign investors.

The non-trade sources of international income and outgo result in a heavy deficit for Puerto Rico. The only statistics available which show the amount of this deficit were compiled by the Brookings Institution for the fiscal year 1927-28. (1) In that year, the Puerto Rican income account showed a net deficiency for all trade and service operations of \$10,357,000 which had to be offset by the sales of securities, real estate, and mortgages, and by other forms of borrowing. The deficiency was accounted for as shown in the opposite page.

Though the deficit situation has not disappeared in Puerto Rico it is highly possible that changes in significant respects have taken place since 1927-28. There are no statistical data available to prove this fact. It is known, however, that some operations which in 1927-28 resulted in a net outgo from Puerto Rico have either almost totally disappeared or been reduced somewhat. For example, most of the capital which formerly was

(1) Clark, Victor S., and others, "Porto Rico and its Problems," Brookings Institution, Washington, 1930, Page 414.

Table LV

Trade and Service Operations, Year Ending June 30, 1928.
(Figures are given in thousands)

DEBTS:

Interest, dividends, and rents.....	\$11,019	
Freight payments and marine insurance on imports....	5,980	
Commissions.....	4,190	
Remittances to families abroad in excess of emigrant remittances.....	302	
Tourist Trade.....	110	
Other insurance transactions.....	1,980	
Motion picture royalties, cable and radio charges.....	407	
Lottery tickets.....	1,000	
Miscellaneous.....	57	\$25,045

CREDITS:

Commodity trade including unrecorded exports and imports.....	\$11,070	
Gifts and contributions.....	506	
Federal expenditures in Puerto Rico.....	2,712	
Advertising.....	400	14,688
Net deficiency for all trade and service operations.....		\$10,357

Source: Clark, Victor S. and others, "Porto Rico and Its Problems",
Brookings Institution, 1930, Page 414.

invested in Spain is at present being invested in Puerto Rico. The Island's present capital needs are also much lower than what they were two or three decades ago, and there is the probability that emigrant remittances may have increased. Tourist expenditures might have resulted, also, in an income for the Island in recent years. The payment of funds, on the other hand, for the acquisition of foreign lottery tickets has almost ceased with the creation in the Island of an Insular Lottery.

On the income side we have the large sums of money which are being expended by Federal agencies in the Island and on the present expansion of the army and navy bases established in Puerto Rico. It is estimated

that the Puerto Rico Reconstruction Administration alone has spent over 75 million dollars on the Island during the last seven years.

B. Tariff Relations with the United States and Their Economic Effects.

1. Products Covered by the Tariff and Estimated Value Added by the Tariff to Puerto Rico's Export to the United States.

The great expansion of Puerto Rico's trade with the United States has been largely due to the inclusion of Puerto Rico within the American customs area. This resulted by virtue of a Presidential proclamation of July 25, 1901. Puerto Rican products, as a result, go into the United States duty free while all products entering the Island from a foreign country are subject to the same tariff duties as those coming into the United States. The omission of duties on Puerto Rican exports to the United States has given a tremendous impetus to the shipments of Puerto Rican products to the Mainland, particularly sugar, tobacco, and fruits. These are the products which have reaped the fullest benefit of tariff protection, and there can be small doubt that the protection is an essential requirement in their growth.

Freedom from duties on products shipped to the United States has given the Island's growers a vital advantage over outside competitors. Puerto Rico could not hope to compete in world markets on the basis of its present high cost of production. The Island cannot grow sugar as cheaply as Cuba, the Dominican Republic, Java and other lower cost sugar producing regions, nor tobacco filler as cheaply as Cuba. Though having an ample supply of labor which enables it to produce at a low labor cost, the Island cannot compete on a wage basis with such regions as China or the Philippines where abundance of labor has resulted in a cheaper labor supply. All these means that Puerto Rico, being a high cost producer, must have a protected

market where to sell its products. This has been accomplished by the inclusion of the Island within the tariff walls of the United States.

Sugar, tobacco, fruits, and other commodities have been protected in the United States market. Table LV shows the tariff rates applied on these products when imported from foreign countries. However, the real worth of this protection to Puerto Rico must be computed on the basis of effective rather than nominal protection, in which case Cuba's 20 per cent preferential must be taken into consideration.

Sugar.--The present tariff rate on raw sugar (96⁰) is 1.875 cents per pound. In determining the real benefit of this protection to Puerto Rico, the preferential granted to Cuba rather than the full tariff rate, must be taken into account. The Cuban preferential was reduced to .0075 per pound by the latest agreement negotiated with the United States. This means that Puerto Rico is now receiving only .0075 cents per pound more for sugar than Cuba, whereas, before the recent agreement came into effect it received .009 cents per pound. In 1939, for example, the Puerto Rican producer was paid the full price of sugar plus .009, or \$16,973,028 more than received by the Cuban growers. If this same amount was carried to the present it would have produced only about 13 million dollars more. Despite these reductions in the Cuban preferential which are adversely affecting the interest of Puerto Rican sugar growers, it pays to have that much protection, otherwise, Puerto Rico would not be able to compete with Cuba in the continental market.

Tobacco.--In the case of tobacco, the amount added by the tariff is of doubtful calculation, since the price of that product has been consistently less than the protection afforded. For example, in 1939-40, the value for the approximately 17,000,000 pounds of leaf and scrap tobacco shipped to the United States was \$6,028,764, or an average value per

exported pound of about 35 cents. The Puerto Rican grower did not receive this price, nor even half of it for his tobacco, however. According to the

Table LVI

U.S. Tariff Rates on Principal Products of Puerto Rico, 1942

Item	:	General	:	Cuban
Sugar (raw) 96° (pound)	:	.01875	:	.0075
Refined (pound)	:	.019875	:	.00954
Molasses 30-35	:	.01 pound	:	.008 pound
Alcohol, ethyl	:	.15 gallon	:	.12 gallon
Rum	:	5.00 p.g.	:	2.00 p.g.
Tobacco filler, stemmed	:	.50 pound	:	.20 pound
Scrap	:	.35 pound	:	.14 pound
Cigars	:	\$4.50 pound / 25%	:	\$1.80 pound / 10%
Cigarettes	:	\$4.50 pound / 25%	:	\$2.25 pound / 12½%
Grapefruit, fresh	:	.015 pound	:	.006 pound
Oranges, fresh	:	.01 pound	:	.008 pound
Grapefruit, Canned	:	.08 pound	:	.064 pound
Pineapple, fresh	:	.50 crate	:	.20 crate
Pineapple, canned	:	.02 pound	:	.008 pound
Coconuts	:	.005 each	:	.004 each
Vegetables, fresh:	:		:	
Peppers	:	.025 pound	:	.015 pound
Cucumbers	:	.03 pound	:	.012 pound
Squash	:	.02 pound	:	.012 pound
String beans	:	50%	:	40%
Pumpkins	:	50%	:	40%
Honey	:	.03 pound	:	.012 pound
Straw Hats	:	\$3.00 dozen / 50%	:	\$2.40 dozen / 40%

Source: Compiled from Custom House Guide, 1942.

Governor's report for 1939-40, the price received by the tobacco grower was of 14 cents a pound. At this price the amount received by him would have been a little over 2 million dollars instead of the 6 million dollars indicated by the Report. It is obvious from these figures that it is not the Puerto Rican tobacco growers who are reaping the full benefits of the protection given by the tariff. However, since the Island could not compete in the continental markets without the protection afforded by the tariff, the whole value of the crop to the grower, or about 2 million dollars in this case, can be credited to such protection.

Grapefruit and Pineapples, Fresh.--The Island's competitors in grapefruit are continental growers who because of their better geographical situation are in a better position to deliver their product more promptly and frequently than could be done by Puerto Rican growers. The only way Puerto Rico can compete with these low cost producers is that its product continues to enter the Mainland duty-free. The payment of even the minimum rate applied on this commodity would wreck completely the Island's industry assuming Puerto Rican growers continue to receive normal prices. That is why it is so difficult to evaluate the protection afforded by the tariff to fresh grapefruit. It could be stated, however, that if Puerto Rico had been forced to pay even the minimum duty levied on this fruit, the Island's income from grapefruit would have dropped by an amount equal to what the payment of the tariff would have cost Puerto Rico. This amount, then, could be taken as representative of the protection given by the tariff to this commodity.

In the case of fresh pineapples, as in the case of sugar, the amount added by the tariff constitutes a definite contribution to the Island's revenues, since without such protection Puerto Rican growers would have to compete with Cuban growers on the basis of prices which are lower than those received by them by approximately the amount of the tariff. Pineapples worth \$842,801 were exported in 1939-40, the protection on 425,022 crates, reaching approximately \$85,000.

Grapefruit and Pineapples, Canned.--In the case of canned grapefruit the fact that there is an absence of competition from foreign areas and that Puerto Rican growers have been consistently receiving prices which are lower than the protection afforded, makes it difficult to evaluate the worth of the tariff to Puerto Rico in terms of dollars and cents. The tariff rate at present being applied amounts to .08 a pound. In no case after 1934

has the price received by the Island's growers been more than six and a half cents a pound. This means that somebody else, save the Puerto Ricans, is receiving the full benefits of the protection afforded by the tariff.

Puerto Rico supplies a very small percentage of the continental market requirements in the case of pineapples. The protection in this case could be taken as the product of the tariff rate by the volume of pineapples which have moved from Puerto Rico each year. In 1939-40 the protection on this basis amounted to \$30,752 (3,844,029 pounds exported multiplied by the tariff on Cuban canned pines).

Needlework.--Since this business is not operated by the utilization of native products, but depends for its material on continental operators, which after finished is re-shipped to United States, it cannot be classified as an export business. There is, however, a sale of services which is estimated to bring into the Island over 5 million dollars annually in normal years. Competition in this sense comes mainly from China and the Philippines which also count with a cheap labor supply. The protection afforded the needlework items is unusually high, yet this high rate constitutes no bar to foreign products which are still able to compete with the products of the Puerto Rican industry. It is obvious, therefore, that the needlework business in Puerto Rico would go to pieces if the protection afforded by the tariff was missing. As this would mean a loss to the Island equivalent to at least the amount of wages being received by needlework laborers, it must be considered that the tariff is benefiting Puerto Rico to that extent.

Though the above enumerated articles constitute the bulk of Puerto Rico's exports, there are a number of other commodities which are marketed in the United States. Denatured alcohol, fresh vegetables, coconuts,

molasses, honey, straw hats, buttons, bay rum, cattlehide and other articles come into the United States without paying the tariff which they would pay if Puerto Rico were not within the American customs area. It is difficult to compute exactly what percentage of these products are benefited by the tariff, and, therefore, the amount of total benefit to the Island. A rough estimate, however, of \$49,000,000 as the value added to Puerto Rican products shipped in 1928 has been made (1), but such a computation has little significance in relation to the well-being of Puerto Ricans, since it implies comparison with a hypothetical situation outside the tariff. Despite this fact the tariff has been and will continue to be of paramount importance to Puerto Rican commodities.

2. Increase in Cost of Imports Due to the Tariff.

The inclusion of Puerto Rico within the American customs area has also greatly stimulated Puerto Rican imports from the United States. By virtue of the fact that the Island has become a part of the American commercial system, it has to levy the same duties upon imports from foreign countries as does the rest of the United States. The result has been to force the Puerto Rican people to trade in the markets of the United States, the markets with the highest prices in the world. This has given the United States a virtual monopoly of the import trade of the Island and has considerably increased the cost of imports to Puerto Rico.

A computation of net gains and losses to Puerto Rico from the tariff was made in 1935. (2) The conclusion was reached that the Island in 1933-34 paid approximately an additional 40 per cent for its commodities

(1) DeGolia, Darwin, "Tariff Problems of Puerto Rico", P.R.R.A., 1935.

(2) Ibid.

brought overseas. This figure contrasted to the added income which the tariff brought to Puerto Rico in the same year (estimated at \$49,000,000 or 60 per cent of the total value of the products, by the same study) left a difference of \$26,000,000 to the Island's favor.

Despite the fact that the tariff brings to Puerto Rico a net gain, the increase in the cost of imports resulting from the necessity of buying in the high-priced markets of the United States, has been a source of complaint on the part of the Puerto Rican people. As the Brookings Report observes "it is contended that they must buy the great bulk of their imports in the United States protected markets, where wages and costs are high, and that they are denied the opportunity of importing their goods from markets where costs of production are lowest." However, as this Report also points out, "the logic of the situation does not point toward giving any state or territory the benefit of inclusion within the American customs union so far as the sale of its commodities is concerned, and of remaining outside that union in connection with its purchases." (1)

3. Distribution of the Added Cost due to the Tariff.

The study on the tariff problems of Puerto Rico already referred to in some other section of this chapter observes the following in this connection:

"About ninety per cent of the tariff-added cost of commodities brought from the mainland is paid by direct consumers, but ten per cent by producers. Commodities which can be classed as necessities, and which are bought in large quantities by the most impoverished elements of the population, are largest proportionate contributors to the cost of the tariff. Producers--or entrepreneurs--are obviously largest proportionate beneficiaries of the protected United States

(1) Clark, Viotor S. and others, "Porto Rico and Its Problems", Brookings Institution, Washington, 1930, Pages 410-411.

market. Thus, if Puerto Rico's tariff-increased cost of living is regarded as payment for the privilege of access to the American market, the poorest class of Puerto Ricans are paying most of this privilege which chiefly benefits the more affluent." (1)

4. Effects of the Tariff.

As has been seen in page 236 of this study, Puerto Rico's products are of such nature that they cannot be consumed locally, but have to be marketed in outside markets. As a result the Island has to get most of its foodstuffs and other commodities to provide for its consumption requirements through importation from outside sources. To obtain the necessary purchasing power to import these necessities from external sources, a protected market for Puerto Rican products has been essential. This protected market is afforded by the United States. Free access to this market has resulted, as indicated in some previous section, in enhancing the value of the Island's exported commodities by more than fifty per cent. Due to the barrier created by the tariff, on the other hand, the Puerto Rican people are forced to purchase its needs in the Mainland protected markets resulting in an estimated payment of approximately forty per cent more for them than they would have cost the Island in world markets.

The above mentioned effects are not the only ones to be ascribed to the tariff. There are some other effects which have sprung indirectly from the same source. These could be enumerated as follows: (1) investment of foreign capital, (2) increase and diversification in opportunities for labor, (3) higher property values, (4) increases in tax revenue, and (5) unfair competitive practices.

Investment of foreign capital.--The fact that Puerto Rico has no large capital resources of its own has been responsible for the heavy investments of foreign capital found in the Island. This capital has emanated

(1) De Golia, Darwin, "Tariff Problems of Puerto Rico," P.R.R.A., 1935, Page 44

not only from American sources, but also from French, Canadian, and Spanish sources. Though not entirely without its disadvantages, foreign capital has been the principal factor in the economic development of the Island during the last 42 years. Denial cannot be made of the fact that without this capital Puerto Rico's productive resources would have enjoyed but little development. The assurance of comparatively high prices for Puerto Rico's export products lay in the political and tariff union of the Island with the United States, and hence is the source and root of the major part of the economic progress of Puerto Rico which may be conceded to capital investments.

Increase and Diversification in Opportunities of Labor.---This second indirect benefit ascribed to the tariff leans directly upon and has resulted from capital investments. Prior to the American occupation Puerto Rico was eminently agricultural. To-day, though agriculture continues to be the main occupation of the population of the Island, many industries, some of which have come into existence as supplementary to agricultural operations and some as a result of the cheap labor supply and tariff protection, provide additional source of employment and income. The processing of such agricultural products as sugar cane, molasses, grapefruits, etc. and the existence of such industries as needlework, diamond cutting and jewel setting, manufacture of mother-of-pearl buttons and of hats from imported fibers, etc. have added considerably to the opportunities for work which existed at the beginning of the century. This expansion and diversification of the opportunities for labor have been due to the general economic development of the Island--which has rested largely on the tariff protected markets of the United States rather than directly upon the tariff.

Higher Property Values.--Tariff protection has resulted in Puerto Rico in a strong discrimination against minor crops, and the fostering of the cultivation of high-money value crops. Indirectly this has brought a tremendous increase in the valuation of property, especially real estate, and the accumulation of large tracts of land in the hands of a single party. Land which normally in minor crops would not yield over \$200 per acre have come to yield over \$500 yearly either in tobacco or sugar cane. Lands that formerly were used for minor crop production have been diverted consistently to the cultivation of sugar cane, tobacco, and fruits. As the yield derived from these products is greater than that formerly obtained in minor crops, the value of these lands has risen accordingly. But the yield of these high-money value cash crops is artificial, based not upon demand but upon an artificial situation created by tariff protection. If the Island was outside the tariff walls of the United States and forced to sell at world prices, no such discrepancy would exist between the yield of an acre of land devoted to cane or tobacco and one in minor crops. It is in this sense that the tariff protection has brought higher property values.

Increases in Tax Revenues.--A higher tax revenue to both insular and municipal governments has been a result of the higher valuation placed on property which, on the other hand, would not have been possible had it not been for the strong economic progress experienced by the Island under tariff cover. Insular government revenue in 1940-41 aggregated over \$20,000,000 as compared to \$2,354,000 in 1897. Customs revenues in 1940-41 amounted to \$840,000, in 1897, to \$1,880,000. The latter fact indicates the Island's lesser dependence on commodities from countries outside the tariff as contrasted to 1897. The highest increase in revenue has come

thus from internal levies rather than from collections on external trade. In 1940-41 the internal levies collected constituted about seventy-five per cent of the total insular revenue. Increased revenue has brought a higher material welfare which has taken the form of better schools, hospitals, roads, bridges, etc.

Unfair Competitive Practices.--The protection granted continental producers in the Island's market makes feasible certain unfair competitive practices which handicap the development on the Island of small industries which could very well provide a certain part of the local needs. The Islanders are through these practices inhibited of increasing the productive capacity of the country and reducing somewhat their dependence on outside markets to supply most of their needs. There are, indeed, many small industries which could be established to serve local needs at no higher costs than they are now provided by the Mainland. The application of "trust" methods and the like by large producers in the Mainland in an effort to "squeeze" the small local business, however, gives little hope of developing these industries.

C. Extent and Character of Absentee Ownership.

A study made by the Brookings Institution on the extent and character of absentee ownership reveals that external holding in Puerto Rico, as they stood in 1927-28, amounted to \$176,294,000 (see Table LVII). The largest item, constituting two-thirds of the total, included all mainland and foreign investments by private persons and corporations. Of these investments those bulking largest were securities of corporations whose primary operations are in the Island (\$70,000,000). These corporations are chiefly

Table LVII

External Holdings in Puerto Rico, 1927-28.

Mainland and foreign investments by private persons and corporations:	Thousands of Dollars	
Stocks and bonds of corporations operating mainly or entirely in the Island	\$70,000	
Foreign-owned enterprises operating in Puerto Rico (chiefly smaller branches of mainland or foreign enterprises)	5,000	
Individual ownership of foreigners and mainlanders in real estate and mortgages of Puerto Rico	25,000	
Deposits of foreigners and mainlanders with Puerto Rican banks	2,000	
Loans and advances of foreign and mainland commercial banks to Puerto Rican corporations and individuals	15,000	
Commercial debts due to foreigners and mainlanders	<u>1,000</u>	118,000
Mainland and foreign investments in Insular and Municipal government securities:		
Insular and municipal government securities	43,894	
External holdings of Puerto Rican short-term securities	500	
Government debt of the Insular government to Federal government	<u>1,200</u>	45,594
Mortgages and loans of the Federal Land Bank and Intermediate Credit Bank		<u>12,700</u>
		<u>\$176,294</u>

Source: Clark, Victor S. and others, "Porto Rico and its Problems,"
Brookings Institution, Washington, 1930.

Mainland ones, and their securities represent assets in the form of both fixed and working capital, particularly plantations and mortgages on land in agriculture in which the corporation has an interest. Real estate and mortgages owned by persons living abroad, as distinguished from those held among the assets of concerns engaged in some active enterprise in the Island are mostly owned in Spain, though also partly in France and continental United States.

Puerto Rican branches of mainland and foreign enterprises are chiefly continental in ownership, but of lesser importance.

Investments in Puerto Rican securities constituted the second most important item of all investments, and accounted for about one-fourth of all external holdings. Mortgages and loans held by the Federal Land Bank and Intermediate Credit Bank made up about seven per cent of the total. These resulted from credit extended for financing the productions as well as the marketing of agricultural products.

The Brookings report estimated that in 1927-28, out of the total wealth of the Island, aggregating something like 650 million dollars, approximately 20 per cent was the property of outsiders. The share belonging to foreigners was more significant than that belonging to Puerto Ricans since it represented active, productive capital, whereas that of the latter, personal property as well as productive capital.

The report also estimated that the item of \$70,000,000 representing investment by outsiders in securities of Puerto Rican corporations was distributed in 1927-28 as follows:

	<u>In Million of Dollars</u>
Sugar	40
Tobacco.....	10
Banks.....	3.5
Fruit.....	2
Miscellaneous, including public utilities	14.5

Thus, on the basis of these figures, the capital invested in sugar was several times that invested in any other single industry. Approximately two-thirds of the securities of the sugar corporations and most of those of the tobacco companies were held outside the Island.

D. Effect of the Coastwise Shipping Laws.

Since 1900 Puerto Rico has been subject to the provisions of the American coastwise shipping laws. Section 27, of the Merchant Marine Act of 1920, pertaining to coastwise shipping provides "that no merchandise shall be transported by water, or by land and water on penalty of forfeiture thereof, between points in the United States including Districts, Territories, and possessions thereof embraced within the coastwise laws, either directly or via a foreign port, or for any part of the transportation, in any other vessel than a vessel built and documented under the laws of the United States and owned by persons who are citizens of the United States, or vessels to which the privilege of engaging in the coastwise trade is extended by sections 18 or 22 of this Act....." The effect of requiring that all goods moving between Puerto Rican ports, and between Island ports and the United States, must be carried in American ships, has been to cut Puerto Rico off from a free choice in shipping her exports and imports. As a result Puerto Rican exports and imports alike carry somewhat higher shipping rates than would be the case were the Island free to use cheaper ships of other nations.

American coastwise shipping laws are a handicap to the Island's trade which reveals itself in three distinct ways. In the first place, it increases the cost of Puerto Rican imports by the extent to which the rates applied between Puerto Rico and the United States are higher than those Puerto Rico could obtain if she had free bargaining power. For example, Puerto Rico must pay $37\frac{1}{2}$ cents a hundredweight to bring rice from New York, whereas the cost from Japan to San Francisco, a distance $3\frac{1}{2}$ times as great, is but 20 cents. To import canned goods from New York, Puerto Rico must

pay 33 cents per 1000 miles for each hundredweight, whereas Chile pays but 20 cents and Rio de Janeiro, 15 cents. To import cement, the cost to Puerto Rican shippers is 25 cents a hundredweight, while Colombia, further from New York, pays only $21\frac{1}{2}$ cents per hundredweight. (1)

In the second place, Puerto Rico has to pay a higher rate for shipping her chief exports than is paid by the principal competitor countries, thus offsetting somewhat the advantage which the tariff gives to the Island in selling in continental markets. In the case of sugar, for example, the Philippines rate on sugar to New York is but a little more than 2 cents a thousand miles for each hundredweight, while the corresponding rate from Puerto Rico is 10 cents. To market fresh fruits in New York, Haiti pays 42 cents a thousand miles for each box and Jamaica 43 cents, whereas Puerto Rico must pay 48 cents. To export canned fruits to New York, the Island pays 21 cents per 1000 miles for each hundredweight, while the Philippines, 10,000 miles away, pays only a little more than 4 cents per 1000 miles. (2)

In the third place, if Puerto Rico were free to utilize foreign carriers whenever it found an advantage in so doing, shipping facilities to foreign countries would probably increase as well as trade with them. If foreign ships were allowed to pick up cargo in the Island for the Mainland as well as for foreign ports, it is not improbable that the traffic of Puerto Rico with Europe and other countries would increase. Puerto Rican export staples would thus have a better outlet, and in turn the Island could buy many of its imports in foreign countries much more cheaply than having them reshipped from the United States. It would thus benefit not

(1) Most of these figures have been taken from Diffie's "Puerto Rico, a Broken Pledge," New York, 1931.

(2) Ibid.

only by the lower rate on foreign shipping but also by a saving of handling charges on the Mainland. It is difficult to see how the Island profits from the present order of things.

CHAPTER X

ECONOMIC OUTLOOK

This remaining chapter is devoted to a discussion of the economic outlook for Puerto Rico in the light of the problems already mentioned in preceding chapters. It has been seen there that the causes which account for the Puerto Rican problem are many, diverse and inter-related. Many of these causes are deep-rooted and of long standing, and cannot be removed immediately. This means that efforts to improve the Island's condition must recognize the peculiar situation of Puerto Rico and the exceptional degree of its distress. In this chapter an effort is made to evaluate the economic possibilities of the Island directed toward an amelioration or solution of the basic problems which are at present confronting it.

A. Population Control.1. Emigration.

As has been seen in Chapter II, emigration has been tried in Puerto Rico in an effort to alleviate somewhat its pressing situation. Experience has shown, however, that there are limited areas in which mass migration would be successful. The Caribbean countries, no doubt, offer some opportunities for employment, but here, as in many other places, people will work for lower wages and are better fitted for the rude tasks of opening undeveloped country and laying out and cultivating tropical plantations than are the Puerto Rican jibaros, with their physical handicaps of ill health and malnutrition. A mass movement of Puerto Rican labor to the neighboring tropic is, therefore, as unlikely as it is unadvisable. While a few laborers do go, and may continue to go, to the neighboring island in search of

employment, there is no present indication that this movement will increase sufficiently to alleviate appreciably population pressure.

A great proportion of individuals and families have also migrated from Puerto Rico and gone to the continental United States. The incentive has been the high money wages of the Mainland. Probably the number of such migrants, who include a large proportion of clerical and skilled or semi-skilled workers, is growing. But up to the present the mainland labor market has remained closed to the unskilled laborers who are in most urgent need of work. Various proposals have been made to facilitate an exodus of such labor by subsidizing steamship lines to enable them to carry steerage passengers at low fares and by using Army transports for this purpose.

So far as present experience goes, therefore, the Caribbean countries and the tropical possessions of the United States are not likely to absorb numbers sufficiently large to relieve the population pressure on the Island to any great extent. A large opportunity for Puerto Rican workers exists in the continental United States and the practical values of this opportunity for the people who need it most will increase in direct proportion as the cost of steerage passage to the mainland is lowered. But the ability of Puerto Rican workers, especially of the lower economic strata, to improve their condition on the mainland will depend largely on their adaptation to continental life in such a way as to make a happy and permanent adjustment and some previous training in industrial employment. Mass migration of contract labor from Puerto Rico has not succeeded in the past and gives no promise of succeeding in the future.

Migration is only a temporary remedy for overpopulation. Probably no case is on record where it has permanently lessened excessive population

pressure in any part of the world. It fails to attack the basic source of the difficulty which is an excess of births over deaths.

2. Increased Income.

Puerto Rico's problems arise out of the limited resources for producing income and the relatively large number of people among whom such return must be divided. More recently this problem has been seriously aggravated by a great reduction in the total income resulting from various restrictions and economic changes. Although the Island's ultimate problem may be that of adjusting to a level that the income from the resources will support at a reasonable standard of living, the immediate one is that of increasing the aggregate income to the point that disaster can be prevented. Unfortunately, the present population trend is constantly diminishing the individual share by ever adding to the number of people who must share and live on the income produced from the Island's limited resources.

Puerto Rico is by far the lowest income section of the entire United States. The average per capita income is only about one-fifth as high as in the rest of the nation. This low level of income has resulted from limited resources, weather damage to crops in 1928, 1931 and 1932, restricted manufacturing opportunities, the high rate of unemployment and limitations upon several of the main industries. The low income reflects itself in the education, health, housing and diet of the people. Despite its capacity to increase substantially the present rate of income, the Island is not allowed to do so by Federal restrictions and by competitive disadvantages as a result of high local costs caused by Federal labor legislation applicable to local industries and low foreign costs resulting

from tariff concessions under reciprocal trade agreements. It is essential that restrictions on profitably agricultural crops and on local manufacturing enterprises be removed as a means of increasing total income and of relieving the present population situation. The increased income will facilitate education for more of the Island's children and keep them in school longer. That will undoubtedly help to reduce the number of births and make for a broader adoption of birth control which will ultimately result in reducing the size of the population and ameliorating present population pressure. An increase in per capita income, with an attendant reduction in unemployment and betterment in living standards, is entirely feasible, given the necessary cooperation from the Federal government. As in continental United States, increased income from local resources and not relief, holds the key to continued and permanent improvement.

3. Reduction in Birth Rate.

Voluntary limitation of births along with education seems to offer the only permanent solution to the Island's population and income problems. If the birth rate were reduced to or below the level of the death rate, there would be either an equal number of deaths and births, or an excess of deaths over births, and the population would tend toward a more normal level. Past experiences demonstrate that this can be done.

Most of the people in Puerto Rico have relatively little education and, consequently, read little. Mainly for these reasons and because of the lack of purchasing power, they have little knowledge of contraceptive methods. While there seems to be relatively widespread demand for this information, the dissemination of contraceptive information has been neglected, and only recently have steps been taken to repeal those portions

of Insular laws which made illegal this dissemination (Act No. 136, May, 1937). Unfortunately, the Federal law continues to apply in all cases where the dissemination of contraceptive advice and materials cannot be justified as a matter of medical necessity. Freedom of action is imperative for proper regulation of birth control. Therefore, any Federal laws which limit that freedom should be repealed.

An effective program of birth control must, however, embrace far more than the dissemination of contraceptive advice and materials. It is both a clinical and an educational problem, and as such, such a program must include measures to raise the standard of living, to encourage social activities, and particularly, to increase parental responsibility. The program should be made a major function of the Insular Department of Health and be financed, if possible, solely from Insular funds.

B. More Effective Utilization of Physical Resources.

No improvement in agriculture suggests itself as likely to solve the Island's present difficulties. Here, as in the case of emigration, remedies which might possibly result in some betterment fail because of quantitative inadequacy. It would require the mobilization of 40,000 or more people yearly to other countries to create the necessary equilibrium between means of support and population that would provide for steady and remunerative employment for those remaining behind. Similarly, an expansion of agricultural output far beyond anything the limited resources of the Island warrant feasible would be required in order to lift the living standards of even a stationary population to anything nearing the mainland level. Present efforts to increase agricultural production, and particularly

food crop production, are of importance, but they can in no sense be a solution, because there is not enough idle land in the Island to absorb a sufficiently large number of the people which are remaining idle.

For a similar reason the changes under way in the system of land tenure will afford but little additional relief to the people and possibly will prove in the long run to be harmful rather than beneficial. There is not enough land to go around to serve the needs of a great number of people. Though the present policies of the Land Authority are highly commendable since they intend to alleviate the living conditions of the poor, consideration must be given to the probable effects which such policies might have in the long run in the economy of the Island. The diversion of land from commercial crops into subsistence farming, or the splitting up of large farms into small holdings, doing away with the advantages of large-scale farming, might possibly result in undermining the present economic structure of the Island to such an extent that far from bringing additional prosperity to the people of the Island, damage beyond repair might be done tending to accentuate present conditions of distress. It pays to make a careful study of these probable consequences before going too far with present propositions.

At the same time the development of agriculture should not be continued merely because of its demonstrated profit-producing capacity, or because of the momentum already gained. Such a policy would involve resorting to lands whose productivity in such endeavors is comparatively low or which require unduly expensive reclamation works; or would undesirably limit the opportunity open for small enterprise. Every effort should be made to foster the production of subsistence crops.

Efficiency in agriculture must be increased to raise the economic standards of the people. Among the many measures that could be undertaken are the improvement of labor technique and ability, additional establishment of processing facilities for certain agricultural products, and the continuation of the policy of organizing cooperatives for production, marketing and the securing of credit.

Routine and ignorance on the part of the inexperienced workers tend to prevent improvements in agricultural operations. Proper supervision and instruction of men while at work should be emphasized more. Schools should continue to be provided for instructing would-be farmers. A trained and adequate supply of skilled laborers is essential in such occupations as vegetable growing, citrus and coffee tree pruning.

In order to utilize more fully the Island's agricultural products, additional marketing facilities must be introduced. Even though capital, organizing ability, skilled labor, and the raw materials of the whole world were available in Puerto Rico, the profit from bringing them together might be lost without an intelligent marketing policy. Scientific marketing demands organized supply, adequate warehousing, cheap financing, low freights, and crop and price information. Farmers must be taught to deliver standardized products of a character and quality that command the most remunerative prices at the time when they can be sold at the greatest profit. In case of ignorant farmers, this requires considerable supervision of farm operations by the marketing agency. Standardization presents a special problem in the processing and grading operations of certain agricultural products in the Island, because the poverty of the masses has prevented their becoming familiar with quality goods. Already careful processing and grading are practiced in citrus fruit and, to some extent,

in the coffee industry. Other steps are being taken to process corn, beans, cassava, and other products.

If the growers are to benefit fully from new processing and marketing facilities, it is essential that they own the mills and other establishments where their crops are to be processed. The formation of well managed cooperatives provides the best means of accomplishing these ends. The idea of cooperativism should continue to be stimulated in Puerto Rico where an efficiency in all economic activities is paramount to reap full benefits from limited resources. This must be extended in an effort to cover as many farmers as possible. Widespread extension of cooperative organization will result in greater diversification, better processing and marketing methods, and in the reduction of credit cost in agriculture.

C. Industrial Prospects.

The development of manufacturing enterprises in the Island faces comparable, even more difficult, problems than agriculture. Lack of experience and of specialized skills, and of native capital funds with which to carry on hazardous industrial experiments are some of the obstacles hindering expansion. But, as the Island's agricultural resources have proved inadequate to provide opportunities of employment for its entire population, and the latter, on the other hand, has been unable to work in considerable numbers in outside labor markets, there is no alternative left but to develop local industries, particularly those employing a cheap labor supply or imported raw materials, or which require tariff protection. There are definite opportunities for developing these types of enterprises on the Island. Enough has already been done in the Island to show that it

enjoys competitive advantages over other producing areas and is in a peculiar, favorable position because of its free access to the continental markets. The benefit of such development is not restricted entirely to providing work opportunities for the Island's population. It tends to equalize the trade balance; it provides a field for the employment of Puerto Rican capital and managerial ability; and it may be a means of facilitating the purchase of local industries under outside control through the stimulation of savings among the people of the Island.

There are in the Island some possibilities for the development of concentrated, large-scale manufacturing enterprises but the prospect for widely diffused small concerns is much better. The dislike which local people have displayed in connection with big foreign corporations is a handicap. Another handicap along the same line is found in the alleged restlessness of labor and the fear occasionally expressed by large employers that the introduction of large-scale manufacturing enterprises would create a discontented labor class.

The Island offers a much better field for small enterprises producing articles of high value in proportion to their weight and bulk, and using processes which make essential a cheap labor supply. Highly mechanized and concentrated industries are not likely to solve the Island's unemployment problem. Dispersed small enterprises, in which hand labor is employed more extensively, may eventually give work to a large part of the Island's population. Industries of the latter type can afford to bring from outside sources the needed raw materials and to ship their finished goods to distant markets.

Since it is desirable to build up a local industrial capital, it would appear advisable for this reason also to foster the development of small and dispersed enterprises in preference to those which are highly centralized and need large capital investments under a corporate form of organization. Puerto Rican workers are well qualified to work in these types of enterprises. The present distribution of the population, easy accessibility to power resources, and the closeness of rural and urban communities to shipping points favor such development. Among the enterprises of this type are the manufacture of toys, watch crystals, lenses and optical goods, glass covers for typewriter keys, and a multitude of small articles and assembly parts, such as are sold through the Woolworth, Kresge and Grant stores in the United States.

Though desirable as it is to build up a local industrial capital, the development of most industrial enterprises in Puerto Rico will have to take place by attracting capital from abroad. The bulk of capital now invested in sugar, tobacco, public utilities and industries is owned on the mainland or in foreign countries, and probably this trend will continue for some time until native capital accumulates to take care of future developments and purchase of industries actually in the hands of outsiders. The procurement of capital from outside resources, however, creates undesirable results, particularly when it is controlled by great corporations. Hostility and distrust between corporations and the public, which prevail even in countries where stockholders and non-stockholders are neighbors, become more serious when the owners and directors of corporations are non-residents and largely of what are considered alien stock or antecedents. A wise and fearless policy in dealing with corporations in a country where

they control so large a percentage of the wealth is evidently needed. Purely punitive and prohibitory methods of regulating them have not succeeded in other countries and they will not succeed in the Island.

The Insular government can do much to encourage industrial development in the Island. In the interest of new industrial development it should proceed to simplify existing laws so that potential investors, unfamiliar with and perhaps distrustful of conditions in Puerto Rico, may know exactly what tax burden to expect. Freedom from taxation, subsidies, or similar encouragements to attract foreign capital are of doubtful wisdom. The honest advertising of industrial opportunities, however, is an unqualified benefit. Well planned and properly financed and supported propaganda would help the Island in its efforts toward industrial expansion. But, ultimately, that expansion depends upon fundamental factors like natural and capital resources, labor, and markets, the value of which can be shown only by experience.

In conclusion, it appears clear that the Island has some possibilities of establishing additional manufacturing enterprises of a small and dispersed character, some possibilities for increased agricultural production, and that such developments may be instrumental in creating some improvement in present economic conditions. This will not, however, be a permanent solution of the problem of low wages and unemployment if the present rate of population increase continues.

So long as present trends of population growth continue, there is little hope, if any, of so increasing the supply of available resources, or of so improving the sum total of commercial opportunities of the Island's agriculture, industry and trade that a satisfactory equilibrium between

social and economic requirements and means of sustenance can be obtained; the need of changing or deviating these trends becomes the most important problem of Puerto Rico. That does not imply that every effort should not be exerted in the attempt to better and lift the earning power of the Islanders; but it does imply that, no matter how much effort is made, an equilibrium between requirements and means cannot be obtained without a drastic change in present population trends; in other words, without widespread and determined resort to birth control.

D. General Suggestions.

Efforts to improve the Island's economic condition must not lose sight of the peculiar situation of the Island and the exceptional degree of its distress. In the benefit of improvement of the present economic situation and political stability, it is essential that a Puerto Rican policy be worked out and applied which considers the peculiar, and in some respects, unique nature of the situation and problems of Puerto Rico. In the formulation of such a policy it is necessary that the present policy of assimilation adopted soon after American occupation be revised to recognize changed conditions and needs. If possible, a thorough study should be made of the feasibility of partially remitting the import levies on certain staple foods. Provision should be made for re-examining the effects of the American coast-wise shipping laws in Puerto Rico's economic life and for some more latitude to Puerto Rico in matters of commercial agreements with neighboring countries. Such a policy must be based on a sound, realistic basis of knowledge and understanding.

Policies should be initiated and steps should be taken as a result of which present population trends would be checked. This means a reduction of the birth rate through birth control to a favorable level

compared to the death rate. These measures must rest in the people of Puerto Rico, their leaders, and government. If steps are not taken to remedy this principal evil, every other effort towards the improvement of the Island's economic condition would be wasted.

All efforts should be made on the part both of the Federal and Insular government to encourage the production of high money value export staples, subsistence farming as a supplement to income derived from other agricultural, industrial, and commercial activities, and the production of new crops which will increase the income of the Island. Ways and means should be devised to increase the sales on the continent and elsewhere of the export staples produced in the Island, to allow the Island to get basic foodstuffs at the cheapest possible price compatible with Federal policy, and to put at Puerto Rico's disposal more adequate means of obtaining necessary credit. Because of the exceptional economic situation, population pressure, and its dependence on the sugar industry, the Island should be permitted to expand sugar output to the extent of its capacity to do so under the Federal policy of protection to domestic sugar producers. If quota legislation is continued, population pressure, paucity of resources, limitation of economic opportunities and one-sided dependence on sugar production for economic support and social stability should be recognized as pertinent factors in the fixation of sugar quotas. If quota legislation is discontinued, other measures must be applied to assure the Island a market in the continent for a minimum volume of sugar in due recognition of the economic and social needs of Puerto Rico.

The Puerto Rican coffee industry is both weak and unprotected. Means must be devised not only to safeguard coffee culture on the acreage

most adequate to this crop but to afford it as much protection as is at present given to other Puerto Rican industries. The possibilities of selling Puerto Rican coffee as a medium priced blend in the Mainland should be carefully examined. To this end, every effort should be made to reduce costs of production and hence price, so that price will constitute no obstacle in the process of absorption into the continental market. In this connection, it is advisable to devise ways of correcting present irregularities in the flow of coffee to the markets and to protect the coffee industry from future hurricanes. The present situation of indebtedness should also be examined in an effort to alleviate the present condition among coffee growers and to make the industry once more attractive to native capital.

Because of the economic and social significance of the tobacco industry as regards both human and soil resources, and the magnitude of the social and economic difficulties and dangers entailed in further decline of the industry, it is essential that some policy be adopted which embodies an extension of credit facilities to growers, the suppression of abuses inherent in the "refaccionista" system, the encouragement of cooperatives, and the means to insure soil conservation and to restore present depleted soils.

Present difficulties in the Island's fruit industry make it necessary that measures be adopted that will protect Puerto Rico's share of the New York market. This calls for a restriction of Cuban imports at New York through increased duties or other means. It seems advisable for United States authorities to work out some sort of new agreement whereby present difficulties found by the Puerto Rican fruit industry in the Mainland

market are removed. Unless this is done the native fruit industry is doomed to disappear.

All sorts of stimuli should be given the development of new industries in Puerto Rico, and steps should be taken to prevent the wreckage of the ones already existing. Measures and policies adapted to the continental economy with its diversity of resources and multiplicity of alternate occupations, by their very nature, may prove, and on many occasions, have proved, ill-adapted to the Island's economy. This means that measures and policies devised for and adapted to the Mainland should, as a rule, not be extended to an essentially different economy without proper allowance for essential differences. The last experience with the application of the Fair Labor Standards Act to Puerto Rican industries evinces this point.

General
Bibliography

- Annual Report of the Auditor, fiscal year ending June 30, 1941, Bureau of Supplies, Printing, and Transportation, San Juan, P.R., 1941.
- Annual Reports of the Governor of Puerto Rico, fiscal years 1901 to 1941, Bureau of Supplies, Printing, and Transportation, San Juan, P.R.
- Annual Report of the Treasurer of Puerto Rico, fiscal year 1940-41, by Rafael Buscaglia, Bureau of Supplies, Printing, and Transportation, San Juan, P.R., 1942.
- Arroyo, Rafael, Manufactura de Ron, Estacion Experimental, Circular 106, Rio Piedras, P.R.
- Asociacion de Productores de Azucar de Puerto Rico, Puerto Rico y su Industria Azucarera, San Juan, P.R.
- Association of Sugar Producers of Puerto Rico, Growth of Business Activity in Puerto Rico and Underlying Causes, Association of Sugars Producers, Shoreham Building, Washington, D.C., August 1938.
- Association of Sugar Producers of Puerto Rico, Some Marks of Progress in Puerto Rico Resulting from Increased Trade, Association of Sugar Producers, Shoreham Building, Washington, D.C., January 1937.
- Association of Sugar Producers of Puerto Rico, Some Standards for Measuring Puerto Rico's Economic and Social Progress, Association of Sugar Producers, Shoreham Building, Washington, D.C., February 1937.
- Barry, Helen V., Child Welfare in the Insular Possessions of the United States, Puerto Rico Bureau Publication #127, U.S. Government Printing Office, Washington, D.C., 1923.
- Bird, Esteban, The Sugar Industry in Relation to the Economic and Social System of Puerto Rico, Puerto Rico Reconstruction Administration, 1937.
- Bureau of Labor of Puerto Rico, Report on the Housing Conditions of Laborers in Puerto Rico, 1914.
- Carroll, H.K., Report on the Island of Puerto Rico, U.S. Government Printing Office, Washington, D.C., 1899.
- Census of Puerto Rico, 1930, U.S. Government Printing Office, Washington, D.C., 1932.
- Census of Puerto Rico, 1935, U.S. Government Printing Office, Washington, D.C., 1937.
- Clark, Victor S. and others, Porto Rico and its Problems, The Brookings Institution, Washington, D.C., 1930.

- Colon Torres, R., Estudio Economico de 270 Fincas de Tabaco en Puerto Rico, 1936-37, Estacion Experimental Agricola, Boletin 50, Junio 1939.
- Colon Torres, R. and Morales, Julio, Cost of Producing Tomatoes in Jayuya, Puerto Rico, Mimeograph Report #15, 1940, Agricultural Experiment Station, Rio Piedras, P.R.
- Commercial Puerto Rico in 1906, U.S. Department of Agriculture and Labor.
- Cordero, Rafael de J., The Colono in the Sugar Industry, 1937 (Typewritten).
- Cordero, Rafael de J., The Problem of Overpopulation in Puerto Rico, 1936 (Typewritten).
- Cutter, M., Informe sobre el Sistema Contributivo de la Isla, 1930.
- DeGolia, Darwin, The Tariff Problems of Puerto Rico, Report of the Tariff Survey Division of the Puerto Rican Emergency Relief Administration, Bureau of Supplies, Printing, and Transportation, San Juan, 1935.
- Del Toro Jr., Emilio, Brief Facts on Tobacco Farming in Puerto Rico in 1935-36 and 1936-37, Agricultural Experiment Station, Mimeograph Report No. 11, January 1938.
- Department of Agriculture and Commerce, Government of Puerto Rico, Puerto Rico, Industrial and Commercial, San Juan, 1938.
- Department of Agriculture and Commerce, Government of Puerto Rico, What Sugar Means to Puerto Rico, San Juan.
- Department of Agriculture and Commerce, Monthly Summaries of Foreign Commerce of the United States and Annual Reports, Customhouse.
- Department of the Interior, Government of Puerto Rico, Annual Report of the Director and Chief Engineer to the Commissioner of the Interior, fiscal year 1940-41, Bureau of Supplies, Printing, and Transportation, San Juan, 1941.
- Departamento de Hacienda, Ley de Contribucion sobre Ingresos y Reglamentaciones, Negociado de Materiales, Imprenta y Transportacion, San Juan.
- Departamento de Hacienda, Leyes Relativas a la Imposicion, Recaudacion, etc. de las Contribuciones sobre la Propiedad y Herencia, Negociado de Materiales, Imprenta y Transportacion, San Juan, 1934.
- Departamento del Trabajo de Puerto Rico, Legislacion Social de Puerto Rico, Negociado de Materiales, Imprenta y Transportacion, 1936.
- Departamento del Trabajo de Puerto Rico, Ley de Salario Minimo para Mujeres, Negociado de Materiales, Imprenta y Transportacion, San Juan, 1937.
- Descartes, S.L., Los Problemas de las Pequeñas Fincas de Puerto Rico, Estacion Experimental Agricola, Informe Mimeografiado Num. 6, Agosto 1937.

- Descartes, C.L., Organizacion e Ingresos de 130 Fincas de Cana de Azucar de Puerto Rico, 1934-35, Estacion Experimental Agricola, Boletin 47, Mayo 1939, Rio Piedras, P.R.
- Descartes, S.L., La Situacion Hipotecaria Rural en Puerto Rico, Estacion Experimental Agricola, Boletin 42, Negociado de Materiales, Imprenta, y Transporte, Enero 1936.
- Diffie, B.W. and J.W., Puerto Rico, a Broken Pledge, New York, 1931.
- Farr and Company, Manual of Sugar Companies, Annual Publications.
- Figueroa, Carlos, Cooperativas Agricolas en Puerto Rico. (Informe Mimeografiado).
- Figueroa, Carlos, La Distribucion de Frutos Menores en el Area Metropolitana de San Juan, 1935 (segunda edicion mimeografiada).
- Figueroa, Leopoldo, El Grave Problema de la Mortalidad Infantil en Puerto Rico, Comision Economica de la Legislatura de Puerto Rico, 1934.
- Gage, Charles E., The Tobacco Industry in Puerto Rico, U.S. Department of Agriculture, Circular 159, March 1939, U.S. Government Printing Office, Washington, D.C.
- Garcia, J.M., Informe Preliminar sobre la Explotacion Economica de 224 Fincas de Cafe, en Puerto Rico durante el 1934, Estacion Experimental Agricola, Circular Num. 104, Agosto 1936.
- Gayer, A.D., Homan, P. and James, E.K., The Sugar Economy of Puerto Rico, Columbia University Press, N.Y.C., 1938.
- Geigel Polanco, V., Apuntes Acerca de la Legislacion Social de Puerto Rico, Departamento del Trabajo, 1936.
- Gobierno de Puerto Rico, Junta de Salario Minimo, Division de Investigaciones y Estadisticas, La Industria del Tabaco en Rama, San Juan, P.R., Mayo 1942.
- Hill, E.B. and Descartes, S.L., An Economic Background for Agricultural Research in Puerto Rico, Agricultural Experiment Station, Bulletin 51, December 1939, Rio Piedras.
- Huyke, Roberto and Colon Torres, R., Costo de Produccion de Tabaco en Puerto Rico, 1937-38, Estacion Experimental Agricola, Boletin 56, 1940.
- Informe del Comisionado del Interior al Honorable Gobernador de Puerto Rico, ano fiscal 1940-41, Negociado de Materiales, Imprenta y Transporte, San Juan, 1942.
- Instituto Puertorriqueno de Economia, La Situacion Azucarera Mundial, EL MUNDO, Octubre 26, 1939.

- Jarvis, Norman D., The Fisheries of Puerto Rico, U.S. Department of Commerce, Bureau of Fisheries, Investigational Report No. 13, Government Printing Office, Washington, D.C., 1932.
- Ley de Tierras de Puerto Rico, Ley No. 26, segun enmendada en 11 de mayo de 1942, Negociado de Materiales, Imprenta y Transporte, 1942.
- Manning, Carolina, The Employment of Women in Puerto Rico, U.S. Department of Labor, Women's Bureau, Bulletin No. 118, U.S. Government Printing Office, 1934.
- McCord, J.E., Descartes, S.L., and Huyke, R., Explotacion Economica de Pequeñas Fincas, Estacion Experimental Agricola, Boletin 43, Enero 1937.
- McCord, J.E., Serralles, Jorge L. and Pico, Rafael, Tipos de Explotacion Agricola en Puerto Rico, Estacion Experimental Agricola, Boletin 41, Negociado de Materiales, Imprenta y Transporte, Noviembre 1935.
- Marcus, Joseph, Labor Conditions in Porto Rico, U.S. Government Printing Office, Washington, D.C., 1919.
- Medina, V. and Descartes, S.L., Facts on the Puerto Rican Coffee Situation, Agricultural Experimental Station, 1937.
- Medina, V. and Descartes, S.L., El Problema Cafetelero de Puerto Rico, Estacion Experimental Agricola, 1937.
- Melendez Munoz, M., Estado Social del Campesino Puertorriqueno, San Juan, P.R., 1916.
- Morales Otero, Perez, Espino, etc., Health and Socio-Economic Studies in the Tobacco, Coffee, and Fruit Regions, (Reprint from the Puerto Rico Journal of Public Health and Tropical Medicine), March 1939.
- Ortiz, Julio B., Under the Coastwise Shipping Laws, Boletin de la Camara de Comercio, February 1935.
- Perez, Manuel A., Factors Contributing to a High Death Rate in Puerto Rico, 1933 (Typewritten).
- Pico, Rafael, Agricultural Problems of Puerto Rico, Puerto Rico Reconstruction Administration, 1936.
- Pico, Rafael, La Autoridad de Tierras en Accion, reproduccion de la Revista de Agricultura, Industria y Comercio de Puerto Rico, 1942.
- Pico, Rafael, Studies in the Economic Geography of Puerto Rico, University of Puerto Rico Bulletin, Series VIII, No. 1, September 1937.
- Pico, Rafael, Report on Conditions and Possibilities of the Sea Island Cotton Industry in Puerto Rico, P.R.R.A., 1936.

Puerto Rico Economic Commission, Porto Rico's Case and the Tariff Bill, A Memorial to the President and Congress of the United States, Washington, D.C., 1913.

Puerto Rico Department of Commerce, Division of Agricultural Economics, Annual Book of Statistics, fiscal year 1939-40.

Puerto Rico Reconstruction Administration, Facts About the P.R.R.A., 1938.

Report of the Committee of Mineral Resources, Bureau of Mines, Government of Puerto Rico, 1934.

Rodriguez, Artemio, A Report on Wages and Working Hours in Various Industries and on the Cost of Living in the Island of Puerto Rico, 1933, Bulletin No. 5, Department of Labor, 1934.

Rosario Colomaban, J., Study of Illegitimacy and Dependent Children in Puerto Rico, 1935 (Typewritten).

Rosario Colomaban, J., The Development of the Puerto Rican Jibaro, 1934 (Type-written).

Serralles, Jorge L., Colon Torres, R., and Julia, Frank L., A Farm Management Study of 194 Small Tobacco Farms in Three Municipalities of Puerto Rico, 1935-36, Agricultural Experiment Station, Mimeograph Report No. 5.

Serralles, Jorge J., Colon Torres, R., and Julia, Frank L., Analisis de la Organizacion y de los Factores que Influyen en los Ingresos de 194 Pequeñas Fincas de Tabaco en Puerto Rico, 1935-36, Estacion Experimental Agricola, Boletin 45, 1938.

Serralles, Jorge J. and Velez, Martin, Precio del Tabaco en Rama al Agricultor en Puerto Rico, del 1907 al 1940, Estacion Experimental Agricola, Boletin 60, Junio 1941.

Smith, Dudley and Requa, William M., "Puerto Rico--Sugar Facts," Association of Sugar Producers of Puerto Rico, Shoreham Building, Washington, D.C., 1940.

Smith, Dudley, Income Problems in Puerto Rico, An Analysis of Income Levels, their effects, and some possibilities of Improvement, Association of Sugar Producers of Puerto Rico, Shoreham Building, Washington, D.C., 1940.

Smith, Dudley, The Tariff, reprint from The Economic Review, May 1938.

Sugar Act of 1937, Public No. 414--75th Congress, Ch. 898, first session in House of Representatives, 7667.

Third Annual Report of the Tobacco Institute of Puerto Rico, by Carlos Esteve Jr., Bureau of Supplies, Printing and Transportation, San Juan, 1940.

- Tobacco Institute of Puerto Rico, The Tobacco Industry in Puerto Rico and the Fair Labor Standards Act, Report of the Tobacco Subcommittee appointed by the Governor's Committee to study general aspects of the Fair Labor Standards Act, March 20, 1939.
- U.S. Cane Sugar Refiners' Association of Sugar Economics, Statistics and Documents, 1938 (136 Front Street, N.Y.C.)
- U.S. Department of Agriculture, Agricultural Adjustment Administration, Compilation of Agricultural Adjustment Act as amended to June 29, 1934.
- U.S. Department of Agriculture, First Annual Report on Tobacco Statistics, U.S. Government Printing Office, Washington, D.C., May 1937.
- U.S. Department of Commerce, Bureau of Foreign and Domestic Commerce, "Puerto Rico, What it Produces and What it Buys," Trade Information Bulletin No. 785, U.S. Government Printing Office, Washington, D.C., 1932.
- U.S. Department of Commerce and Labor, Commerce and Industries of Alaska, Hawaii, Puerto Rico and Philippine Islands, U.S. Government Printing Office, Washington, 1913.
- U.S. Department of Labor, An Explanation of the Fair Labor Standards Act of 1938, U.S. Government Printing Office, Washington, D.C., 1938.
- U.S. Foreign Trade Zones Board, Establishment of Foreign-Trade Zones in United States, U.S. Government Printing Office, Washington, 1935.
- U.S. Foreign Trade Zones Board, Regulations in Foreign Trade Zones, U.S. Government Printing Office, Washington, D.C., 1936.
- U.S. Senate--74th Congress--2nd Session--Document 274, Payment made Under the AAA Program, U.S. Government Printing Office, Washington, D.C., 1936.
- U.S. Tariff Commission, Report on Sugar (No. 73), U.S. Government Printing Office, Washington, D.C., 1934.
- Verrill, A. Hyatt, Puerto Rico, Past and Present, Dodd, Mead & Co., 1920.
- Zimmermann, Erich W., "Staff Report to the Interdepartmental Committee on Puerto Rico," Washington, D.C., September 9, 1940.

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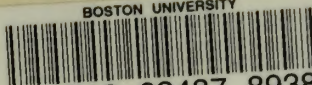
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